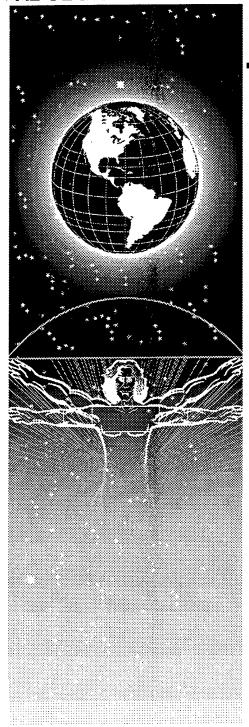
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# UNITED STATES AIR FORCE ARMSTRONG LABORATORY

# Missouri Industrial Wastewater System Characterization and Analysis, Whiteman Air Force Base

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March 1998

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Personnel from the Armstrong Laboratory Water Quality Branch conducted an industrial wastewater system characterization survey (IWSCS) at Whiteman Air Force Base, Missouri; 17 March through 4 April 1997. The scope of the investigation was to determine the cause of existing operational difficulties with the industrial wastewater system and to identify pollution prevention opportunities that could enhance system management. The IWSCS analysis indicated industrial wastewater treatment plant unit operations were performing significantly below design expectations and the overall volume and character of industrial wastewater generated at Whiteman AFB was of low flow during dry weather and less strength than typical domestic sewage. The cause of the poor IWTP performance was determined to be related to the 1) hydraulic and organic characteristics of the raw influent wastewater and 2) fundamental modifications of basic plant operation. The general character and nature of industrial wastewater at the base was found to be controlled by industrial and flight operations, fuel releases, and fire protection system alarms.

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#### **SECTION I**

#### INTRODUCTION

At the request of Mr. Gary Nault, Headquarters Air Combat Command, and the 509<sup>th</sup> Civil Engineering Squadron, personnel from the Armstrong Laboratory/Occupational Environmental Health Directorate, Water Quality Branch (AL/OEBW) visited Whiteman Air Force Base (AFB) with support from Mitretek Systems (AL/OEBW contractor) to conduct an Industrial Wastewater System Characterization Survey (IWSCS). Initial direction for this survey was based on recommendations from the Whiteman AFB Industrial Wastewater Treatment Plant Characterization and Analysis Report (May 1997). The characterization of the operational problems associated with the Whiteman AFB Industrial Wastewater Treatment Plant (IWTP) was conducted in December 1996. The report determined that insufficient information and data concerning the actual hydraulic and organic loading characteristics of Whiteman AFB industrial wastewater was available to finalize recommendations concerning needed operations changes or modifications to the IWTP. The IWSCS was initiated during a site visit that began 17 March 1997 and concluded 4 April 1997 to address this need for additional information. All IWSCS activities were coordinated through the Whiteman AFB 509th CES/CEV. This report would not have been possible without extensive help and support from Mr. Ed Lenz-509<sup>th</sup> CE/CEO, Mr. Darrell Tackett-509<sup>th</sup> CE/CEOI, Mr. Jerry Whitford-509<sup>th</sup> CE/CEC, Captain Pollack 509th CE/CEO, and Mr. Jim Diddier-509th CE/CEF. The principal Whiteman AFB points of contact for the AL/OEBW team were:

- Mr. Ed Lenz
- Mr. Darrell Tackett, and
- Mr. Jerry Whitford.

#### AL/OEBW field team members on this project were:

- Master Sergeant Mary Fields, Enlisted Team Leader
- Lieutenant David Mihalik, Field Team Leader,
- Staff Sergeant Rusty Habel,
- Senior Airman Richard Charles,
- Senior Airman Jason Giles.
- Captain Scott Nickerson, and
- James Morgan, Principal Engineer and Hydrologist, TEAM, LC.

A special note of appreciation is extended to Capt. Nickerson, Lt. Mihalick, S. Sgt. Habel, Sr. A. Charles and Sr. A. Giles, whose long hours of hard work enabled the field elements of this project to be completed successfully.

Other team members made important contributions at the analytical laboratory facilities located at Brooks AFB, Texas. Armstrong Laboratories Analytical Services Group provided accurate and precise analytical data during a time critical turn around period that enabled this report to be produced rapidly. Project team members who worked in support of this project element were:

- Lt. Colonel Victoria Dunovant, Analytical Services Chief,
- 2<sup>nd</sup>. Lieutenant Gerardo Ramos, AL/OEA
- Master Sergeant Doris Dohner, AL/OEBW
- Staff Sergeant Carl Bates, AL/OEA
- Ruth Weddell, AL/OEA
- Sr. A. Barry Calhoun, AL/OEA
- Susan Smith, AL/OEA
- Denene Turner, AL/OEA and
- Lt. Colonel Locke, AL/OEA

The IWSCS was organized into three distinct activities that occurred during the AL/OEBW field team visit at Whiteman AFB. The activities were:

- 1) initial review and familiarization with base industrial, fire protection, fuel distribution, and other flight support operations,
- 2) site visits to all industrial shops generating wastewater adjacent to the flight line area, and
- 3) intensive observation and long term sampling of industrial wastewater at critical points within the industrial wastewater collection system.

After completion of the above activities, the AL/OEBW Field Team made an initial assessment of the industrial wastewater problems and the associated flight support and industrial operations impacting industrial wastewater character. These initial field review results and recommendations were organized within an out-briefing outline. The out-briefing outline was presented by Master Sergeant Mary Fields Friday; 4 April 1997 to interested parties at Whiteman AFB. The initial findings and IWSCS assessment were reviewed at that time.

#### 1.1 Purpose

The purpose of the AL/OEB *Industrial Wastewater System Characterization Survey* (IWSCS) conducted at Whiteman AFB was to:

1) develop an understanding of the Whiteman AFB industrial operations impacting the quality, quantity and character of raw industrial wastewater,

- observe, characterize and identify flight operations and wastewater discharges adversely impacting the IWTP or general character of industrial wastewater,
- 3) develop recommendations and/or a plan of action to address any issues having an adverse impact on the general industrial wastewater system, the IWTP, and the Federally Owned Treatment Works (FOTW).

The purpose of the IWSCS was accomplished. Initial observations and recommendations from the AL/OEBW Field Team were provided to Whiteman Air Force Base personnel at the out-briefing. A copy of the AL/OEBW Field Team's out-briefing outline is provided as Appendix 1. The purpose of this report is to present follow up information developed as a result of the field investigation and analysis of the industrial wastewater samples collected. An important function of this report is to integrate the sample data collected from the IWTP on 12 December 1996 and other written technical information obtained during the Whiteman AFB site visit, with the actual observations and recommendations made during this survey. This approach will allow the 509th CES to develop decisions for managing and treating the industrial wastewater generated by the current flight operations in a manner that will cause minimal disruption to other base operations and will support continued compliance with the wastewater discharge limitations of the National Pollutant Discharge Elimination System (NPDES) Permit.

#### 1.2 Background

Whiteman AFB, Missouri is the home of the 509<sup>th</sup> Bomber Wing. The 509<sup>th</sup> Bomber Wing is comprised of the most technically advanced and sophisticated airplane in the world, the B-2 Stealth Bomber. An A-10 fighter squadron and helicopters are also located at Whiteman AFB. Prior to this new air wings' location at Whiteman AFB, the primary base occupant was the 351<sup>st</sup> Missile Wing. The location of the new air wings at Whiteman AFB has impacted a large number of base operations that generate industrial wastewater. Sverdrup Corporation conducted an industrial wastewater pretreatment survey in the spring of 1995. The base's primary occupant during the 1995 pretreatment survey was still only the 351<sup>st</sup> Missile Wing. Operations supporting the mission of the B-2 Stealth Bomber potentially generate wastewater containing many contaminants not historically associated with the industrial activities at Whiteman AFB. Addition of the A-10 fighter wing has resulted in additional jet engine maintenance activity and plane washing wastes. Consequently, the hydraulic and organic characteristics of industrial wastewater at Whiteman AFB have changed since the original IWTP was designed.

The new 509<sup>th</sup> mission has had many impacts. One impact of the new mission is heightened concern for worker safety. Many components used for construction and maintenance of the B-2 are hazardous materials. As such, special training and medical monitoring has been provided for some workers that could be exposed to chemical hazards. Also, maintenance activities and flight support operations that may expose workers to chemical hazards have been submitted to intensive review by base management

and general awareness of the dangers of exposure to chemical hazards has been improved among both civilian and military workers.

Workers at the IWTP have not been subjected to an annual medical monitoring program designed to monitor their exposure to chemical hazards. Many plant operators have reported odors similar to rotten eggs or hydrogen sulfide. Some workers believe headaches and fatigue they experience may have been related to the odors. A health and safety incident occurred at the facility in August 1994 that resulted in plant shut down. Employees experienced acute respiratory tract irritations, which required medical attention. Many parties involved with the industrial wastewater treatment operations have generally expressed a concern for personal safety at the IWTP. The adequacy of industrial wastewater pretreatment and questioning of the need for industrial treatment facilities have also become issues because suspension of the IWTP operations since September 1996 has not resulted in an apparent effluent violation of the NPDES permit governing discharges from the FOTW. Also, industrial shop workers supporting B-2 operations at Whiteman AFB have expressed heightened interest and concern relating to both the use of hazardous materials and their ultimate disposal or treatment. This increased chemical hazard awareness has focused substantial effort on pollution prevention amongst the B-2 related industrial shops. This background information was very useful to the AL/OEBW Field Team when evaluating actual operations.

#### 1.3 Overview of Industrial Operations

The principal industrial operations at Whiteman AFB are associated with support of the 509<sup>th</sup> Bomber Wing. Flight operations and maintenance in support of the A-10 fighter wing, T-38 flight training wing and a helicopter squadron were also believed to significantly impact the characteristics of the industrial wastewater at the base and were a prominent element of focus and study by the IWSCS field team. Typical industrial activities performed at Whiteman AFB are:

- jet engine maintenance and repair,
- non-destructive structural inspection activities,
- routine airframe maintenance,
- plane fueling operations,
- petroleum storage,
- hydraulic maintenance,
- plane washing,
- aircraft deicing.
- Aircraft ground equipment (AGE) operation and maintenance,
- corrosion control,
- electrical equipment and instrument maintenance,
- equipment testing.

- refueling vehicle maintenance,
- photographic development laboratory,
- fire protection and fire protection hydrant testing,
- vehicle and AGE washing,
- floor cleaning in shops and hangars, and
- other routine aircraft maintenance activities.

Wastewater generated from these industrial activities has the potential to vary markedly as a result of potential chemical releases from maintenance and flight operations in support of the B-2 wing. Potential releases of complex organic and heavy metal contaminants to the industrial wastewater system have been a concern of the CES/EM flight for some time. Consequently, extensive pollution prevention activities and awareness training has been provided to many Whiteman AFB personnel. Generally, wastewater produced at Whiteman AFB, Missouri was believed to be similar to the industrial wastewater generated from comparable activities at other Air Force facilities. However, field observations and sample data collected during the survey determined that many of the Whiteman AFB industrial shops and flight operations produce very small volumes and very weak or mild strength industrial wastewater when compared to those of other Air Force facilities.

#### 1.4 Description of Industrial Wastewater Treatment System (IWTS)

The Whiteman AFB Industrial Wastewater Treatment System is comprised of six primary elements. The design and construction of the system was initiated in February 1991 before any B-2's were operational. Consequently, many critical design parameters were not based on actual data. The primary IWTS elements are the; 1) industrial wastewater pretreatment units, 2) industrial wastewater collection system, 3) aqueous film forming foam (AFFF) surge facilities, 4) industrial waste equalization facilities, 5) the IWTP, and 6) the FOTW. Each IWTS element serves an important purpose with respect to the conceptual design and operation of the industrial wastewater treatment system. The principal function of each IWTS element is:

- 1. industrial wastewater pretreatment units (e.g., oil/water separators) are in place to remove shock loads of oil and grease or suspended solids,
- 2. the collection system conveys the industrial wastewater from their source to the IWTP for initial treatment,
- 3. the AFFF surge facility provides temporary storage for hi-oxygen demanding wastes associated with fire protection,
- 4. equalization facilities normalize extreme variances of hydraulic and organic wastewater characteristics,
- 5. the IWTP provides the principal pre-treatment for industrial wastes to ensure NPDES Permit No. MO-0029378 compliance and

the FOTW provides a secondary or last option capability to treat industrial
wastewater and ensure permit compliance at a point of discharge to waters of
the State of Missouri.

The technical focus of this IWSCS was on elements two and three noted above. Attention was also given to element one, industrial wastewater pretreatment facilities, in order to assess any adverse impact on industrial wastewater character resulting from insufficient maintenance or improper operation. A drawing of the Whiteman AFB IWTS facilities and a legend identifying their location is presented as Figure 1.

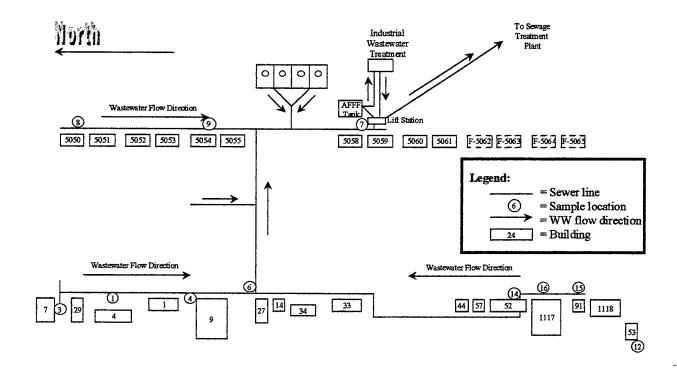


Figure 1: Drawing of Whiteman AFB Industrial Sewer, Shops, and Industrial Wastewater Treatment Plant

#### 1.5 Problem Summary

Many questions and uncertainties concerning operation of the IWTP and the character and nature of industrial wastewater have been raised by managers, and workers at Whiteman AFB. Some of the more critical issues are:

- Workers are concerned that they are exposed to unknown chemical hazards that may affect their health.
- The character and nature of industrial wastewater at Whiteman AFB has not been previously established with sufficient certainty.
- The impact of individual industrial shops at the base on environmental operations is not adequately known.
- Management is concerned industrial wastes may cause the FOTW to not comply with the NPDES discharge limitations.
- Are there odors at the IWTP and, if so what are they?
- Does the IWTP work effectively?
- Is the IWTP actually needed?
- How can wastewater foaming caused by AFFF be prevented?
- Will an oil/water separator eliminate any or all-remaining industrial wastewater system problems?

Many of the concerns listed above were addressed in a previous report entitled the Whiteman Air Force Base, Missouri Industrial Wastewater Treatment Plant Characterization and Analysis (May 1997, Morgan & Fields). This report provides answers to all the significant remaining issues.

#### 1.6 Problem Analysis

The Whiteman Air Force Base, Missouri Industrial Wastewater Treatment Plant Characterization and Analysis report provided answers to the questions:

- Are there odors at the IWTP and, if so what are they? Yes, hydrogen sulfide and jet fuel odors are two examples
- Does the IWTP work effectively? No, 12 December 1996 operation of the IWTP resulted in negative average treatment efficiencies for chemical oxygen demand and heavy metals reduction.
- Management is concerned industrial wastes may cause the FOTW to not comply with the NPDES discharge limitations. Surges of industrial waste such as AFFF or a major fuel spill could cause the FOTW to operate in a manner non-compliant with the NPDES permit requirements. Such an event would likely be of short duration (<30 days).

The answers to the remaining significant issues were addressed by this study. These answers are:

- The character and nature of industrial wastewater at Whiteman AFB has not been previously established with sufficient certainty. The character and nature of Whiteman AFB industrial wastewater is of very low flow or volume and generally of organic strength less than domestic sewage. Potential surges of AFFF or jet fuel contaminants may occur and may cause serious FOTW operational problems that could result in NPDES permit non-compliance.
- The impact of individual industrial shops at the base on environmental operations is not adequately known. Generally, operations associated with the B-2 mission have very little detrimental impact on industrial wastewater. Maintenance activities and flight support operations associated with the A-10 and T-38 wings generate industrial wastewater that have the greatest potential for routine industrial wastewater management problems.
- Is the IWTP actually needed? Under normal conditions the IWTP is not needed to ensure compliance with the NPDES permit. However, additional treatment facilities are needed to manage industrial wastewater loads that could occasionally surge the FOTW capacity. It is recommended that the IWTP be modified and maintained as operational to treat potential industrial contaminants that may be generated as a result of a spill or from a change in the existing B-2 maintenance and flight operations support.
- How can wastewater foaming be prevented? Addition of a foam suppressant at critical points within the industrial wastewater collection system is currently effective for control of normal discharges of AFFF.
- Will an oil/water separator located downstream from the AFFF surge basin eliminate any or all-remaining industrial wastewater system problems? An additional oil/water separator is needed to effectively manage free jet fuel associated with industrial wastewater.
- Workers are concerned that they are exposed to unknown chemical hazards that may affect their health. No unexpected chemical hazards were identified during the IWSCS, however both IWTP and FOTW workers are confronted with potential exposure to chemical hazards. A wastewater treatment plant worker has historically been a profession that is very prone to accidents and chemical hazards. It is recommended that both IWTP and FOTW workers undergo annual medical monitoring in compliance with EPA/OSHA requirements for workers exposed to hazardous wastes and materials.

Additional information on all of these issues is provided within this report.

#### **SECTION 2**

# INDUSTRIAL WASTEWATER SYSTEM CHARACTERIZATION SURVEY METHODS and APPROACH

The Industrial Wastewater System Characterization Survey (IWSCS) was organized into three distinct investigative activities. The activities were:

- 1) initial review and familiarization with base industrial, fire protection, fuel distribution, and other flight support operations,
- site visits to all industrial shops generating wastewater adjacent to the flight line area, and
- 3) intensive observation and long term sampling of industrial wastewater at critical points within the industrial wastewater collection system.

Significant study of the Whiteman AFB industrial wastewater system (IWS) and careful planning of the IWSCS objectives, data needs, sampling protocols and analytical laboratory methods prior to the March-April 1997 site visit enabled the requirements of each IWSCS investigation activity to be accomplished. The methods of approach and other important elements for accomplishing each of the IWSCS activities are presented in this section of the report.

#### 2.1 Review of Key Industrial Shops and Flight Support Operations

Each industrial shop and flight operation support activity was assessed and prioritized prior to the field survey for identification of problems and actions likely to impact the character and nature of the industrial wastewater at Whiteman AFB. Table 1 identifies the maintenance activity or flight support function and associated building number of industrial activities at Whiteman AFB.

Table 1: Industrial Wastewater Function and Building Number				
Building #	Function	Building#	Function	
1	B-2 Fuel Cell Hanger	2_	B-2 Engine Maintenance	
4	AGE and BRA Storage	7	AGE	
9	B-2 Maintenance Hanger	14	B-2 Weapons Load Trainer	
19	Hangar 9 Storage	27	B-2 Corrosion Control Hangar	
33	393 <sup>rd</sup> . Bomb Squadron	34	Fire Station	
35	Base Operations	36	Generator/Equipment Building	
44	Army National Guard (ANG) Administration	50	Control Tower	
52	ANG Maintenance	69	TE Load Test Facility	
90	Petroleum Operations	91	T-38 Maintenance Hangar	

	ontinued: Industrial Wastewat		
Building #	Function	Building #	Function
190	Hangar 9 Break Patio	1117	A-10 Maintenance Hangar
1118	A-10 Special Purpose Hangar	`1119	A-10 Composite Maintenance
1125	Refueler Vehicle Maintenance	5050	B-2 Maintenance Dock # 1
5051	B-2 Maintenance Dock # 2	5052	B-2 Maintenance Dock # 3
5053	B-2 Maintenance Dock # 4	5054	B-2 Maintenance Dock # 5
5055	B-2 Maintenance Dock # 6	5058	B-2 Maintenance Dock # 7
5059	B-2 Maintenance Dock # 8	5060	B-2 Maintenance Dock # 9
5061	B-2 Maintenance Dock # 10	5062	B-2 Maintenance Dock # 11 (FY 97)
5063	B-2 Maintenance Dock # 12 (FY 97)	5064	B-2 Maintenance Dock # 13 (FY 99)
5065	B-2 Maintenance Dock # 14 (FY99)	5068	Hydrant CASS Systems
5069	Hydrant CASS Systems	5070	Hydrant CASS Systems
5070	CASS Maintenance Shop	5300	Fuel Tank
5301	Fuel Tank	5302	Fuel Tank
5303	Fuel Tank	5400	Fuel Pump House
5401	Fuel Pump Control house	5402	Fuel Pump house
5403	Hydrant CASS Systems	5413	AFFF Storage Tank
5415	Industrial Wastewater Treatment Plant		

Figure 2 presents a building location map of the maintenance and flight operations support areas generating industrial wastewater.

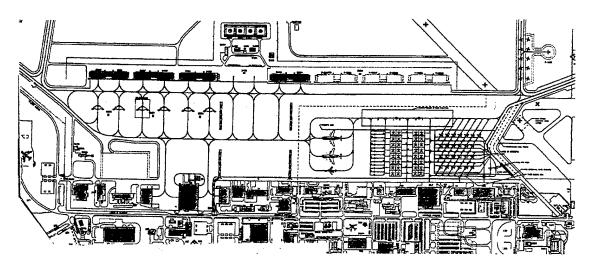


Figure 2: Building and Industrial Functions

Based upon information developed in December 1996 by the Whiteman AFB IWTP Characterization and Analysis and supplemented by a working knowledge of air base operations,

the fuel distribution and fire protection systems were identified as areas having significant potential impact on the IWSCS. The B-2 industrial shops located in buildings 7, 9, and 27 (Aircraft Ground Equipment, Structural Maintenance, Jet Engine Maintenance and Corrosion Control shops) were also prioritized as facilities likely to generate wastewater that would have a negative impact on the character and nature of industrial wastewater. In addition to sampling industrial wastewater and conducting pollution prevention opportunity assessments of the previously noted systems and industrial shops, intensive interviews were conducted by Jim Morgan and Mary Fields with;

- Ralph McHenry, Fire Chief
- Richard Organowski, Assistant Fire Chief
- Jim Didier, Deputy Fire Chief
- Tim Alms, Refueling Maintenance Foreman
- Ed Lenz, Utilities Engineer CES/CED
- Darrell Tackett, Wastewater Treatment Plant Operator

The purpose of the interviews was to develop information specific to each persons expertise as it could relate to incidents that might generate industrial wastes and contaminants that could enter the industrial wastewater collection system. Information obtained from these interviews is incorporated into the analysis and recommendations associated with their specific problem area, industrial shop, or sample site.

#### 2.2 Industrial Shop Pollution Prevention Opportunity Assessments

Master Sergeant Mary Fields, NCOIC, conducted pollution prevention opportunity assessments (P2OA) of all industrial shops at Whiteman AFB. P2OA's were conducted by:

- interviewing key shop operations personnel,
- observation of the shop maintenance and flight operations support activities,
- review of the shop specific material safety data sheets of inventoried chemicals,
- observation of chemical storage facilities,
- evaluating operation and maintenance of hazardous waste management and industrial wastewater pretreatment facilities, and
- developing practical recommendations for pollution prevention and environmental improvement.

Individual reports outlining the specific findings and recommendations with respect to individual industrial shops and flight support activities are provided in Appendix 6 of this report. When appropriate, pollution prevention opportunity assessment observations and opportunities were incorporated within Section 4.

#### 2.3 Industrial Wastewater System Sampling and Analysis

Sixteen sites within the Whiteman industrial wastewater collection system were identified prior to the field survey as locations providing wastewater quality information useful for system analysis. Additionally, samples of any wastewater contained within the primary AFFF surge tank (building 5413) and the IWTP equalization basin were also deemed appropriate. Table 1 identifies the sample site location with its' associated building location, industrial shop activity, and the planned sample frequency. Samples from sites 1, 3, and 14 were unable to be collected during the survey, as no industrial wastewater was generated from the associated facilities during the IWSCS.

#### 2.3.1 Sampling Procedures, Techniques, and Laboratory Analytical Methods

Industrial wastewater sampling procedures and techniques were guided by the use of ASTM Standards D5956 and E1689. Individual aliquot's (approximately 500 ml) of composite samples were automatically collected by an ISCO peristaltic pump type sampler, at each sample site every hour. Sample aliquot's were iced and stored in glass containers until the containers were collected and manually composited and preserved.

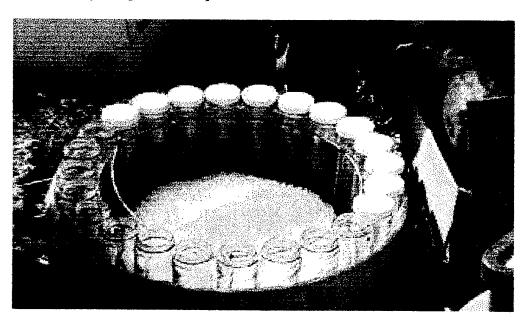


Figure 3: Composite samples were collected in glass containers with an ISCO automatic sampler, preserved for the analyte of interest and identified for Chain of Custody control before to shipment to Armstrong Laboratories Water Analysis Branch at Brooks AFB, Texas.

Original IWSCS plans were to flow weight individual composite samples using Sigma flow recorders to determine individual aliquot volumes. However insufficient industrial wastewater

flow was generated during the survey period to utilize the flow meters. Flow at most sample sites was estimated to be less than 1 gpm for most times. Consequently, only time weighted composite samples were collected during the survey.

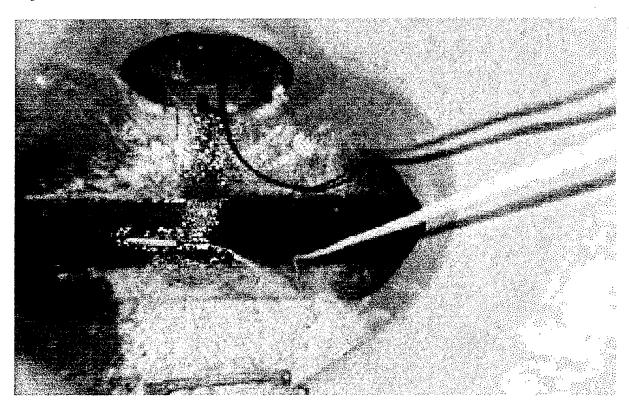


Figure 4: Industrial wastewater flow was typical of that shown at the manhole above. Lack of sufficient industrial wastewater flow to submerge the Sigma flow sensor (depicted at the top center of the photograph) resulted in collection of time-weighted composite samples for the Whiteman AFB IWSCS.

Grab samples were also collected in glass VOA vials for analysis of volatile organics from each sample site at the conclusion of each composite sample period. Standard sample preservation techniques referenced in *Standard Methods for the Examination of Water and Wastewater* guided sample preservation and transport. ASTM Type II Reagent Water and Alquinox Soap were the primary materials used for decontamination of sampling equipment and containers. The analytical method number, standard sample preservation requirements, and the method detection limit of the laboratory analytical methods used by the Armstrong Laboratory-Water Analysis Section to analyze Whiteman AFB IWSCS samples is identified in Table 2.

Tal	ble 2 Principal Labora	atory Analytical Procedu	res
Chemical Analyte	Analytical Method Number	Sample Preservatives	Method Detection Limit
Chemical Oxygen Demand	E 410.4	1L, 2 ml H <sub>2</sub> SO <sub>4</sub>	<10 mg/L
Total Organic Carbon	E 415.1	1L, 2 ml H <sub>2</sub> SO <sub>4</sub>	•
Oil & Grease	E 413.1	1L, Glass/ 2 ml H <sub>2</sub> SO <sub>4</sub>	<0.3 mg/L
Ammonia as N	E 350.1	1L, 2 ml H <sub>2</sub> SO <sub>4</sub>	<0.2 mg/L
T-Phosphate	E 365.1	1L, 2 ml H <sub>2</sub> SO <sub>4</sub>	<1 mg/L
Total Cyanide	E 335.1	1L, NaOH	<.005 mg/L
Total Residue	•	1L, 4° C	<1 mg/L
Filterable Residue	E 160.3	1L, 4° C	<1 mg/L
Volatile Residue	E 160.4	1L, 4° C	<1 mg/L
Sulfides	E 376.1	1L, 4° C	<0.1 mg/L
Volatile Organic Compounds	E 601/602	2-40 ml VOA vials/4° C	<.005 mg/L
Metals	E 200.7	5 ml HNO <sub>3</sub>	-
2(2-Butoxyetoxy) Ethanol	GC/MS	2-40 ml VOA vials/4° C	<0.1 mg/L

### 2.3.2 Quality Assurance/Quality Control Samples

Quality Assurance/Quality Control (QA/QC) samples were collected at appropriate times during the IWSCS. QA/QC samples were collected of sampling equipment rinse water, ISCO sampling equipment blank, field reagent water, heavy metals preservative, sampling pitcher equipment blank, and blind known samples. Results of the QA/QC samples indicate the laboratory analytical methods; sampling procedures and sample preservation techniques were within the necessary control limits with respect to the precision and method detection limits required by the IWSCS. Laboratory analytical values associated with the QA/QC samples are provided with the data tables included as Appendix 3.

#### **SECTION 3**

# INDUSTRIAL WASTEWATER SYSTEM ELEMENT DESCRIPTION

Seven independent elements interact systematically to compose the Whiteman AFB industrial wastewater system. At times the interaction is synergistic in nature. The seven industrial wastewater system elements are the:

- Industrial wastewater collection system
- Industrial wastewater treatment plant (IWTP)
- Federally owned treatment works (FOTW) or domestic sewage treatment plant
- B-2 industrial shops and flight operations support
- Other aircraft industrial shops and flight operations
- Five separate industrial fire protection systems
- Jet fuel distribution

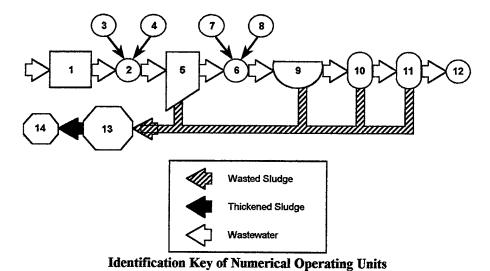
This section of the *Industrial Wastewater System Characterization Survey* provides information critical to understanding each of the above elements' environmental problems and describes their systematic interaction. Linkage of environmental problems between industrial shops, flight operations, and flight utilities sources generating industrial wastewater, the treatment capabilities and permit requirements of the FOTW, and the industrial wastewater treatment plant operations is described. The information presented here is organized by its industrial wastewater system component.

#### 3.1 Industrial Wastewater Collection

Industrial wastewater generated from fifty one industrial shops and base operations are collected by four industrial sewer legs and trunk lines that drain to a wet well and lift station at the AFFF surge tank. Industrial wastes at the AFFF wet well either gravity flow to the AFFF surge Tank, are pumped to the equalization basin for treatment at the IWTP, or divert directly to the sanitary wastewater collection system for final treatment at the FOTW. The approximate location of the industrial wastewater collection system is shown on Figure 2. No major problems with the industrial wastewater collection system have been identified as a result of the IWSCS. Some problems with infiltration have been reported in the past and an infiltration/inflow (I&I) study of the system is currently contracted. In addition to identification of specific causes of infiltration/inflow, the contracted I&I study may possibly identify one or more industrial waste exfiltration problem within the sewer. The industrial wastewater collection system was not a primary focus of the IWSCS.

#### 3.2 Industrial Wastewater Treatment Plant

Operational problems associated with the IWTP are responsible for initiating the IWSCS study. May 1997 report AL/OE-TR-1997-0067 provides an initial AL/OEBW assessment of industrial wastewater problems at Whiteman AFB and also describes past operational problems encountered at the facility in detail. The treatment components of the Whiteman AFB IWTP are an inclined plate clarifier, pH adjustment, dissolved air flotation, sand filters, activated carbon filters, sludge thickener, sludge filter press and effluent recycle capability. A simplified flow chart of the industrial wastewater treatment process units is provided as Figure 5. The average design flow rate or design hydraulic loading of these facilities is 60 gpm or 86,400 gpd during continuous twenty-four hour operation.



- 1 Equalization Basin
- 2 Mixer
- 3 NaOH pH Adjustment
- 4 Nalco Defoaming Polymer
- 5 Inclined Plate Clarifier
- 6 Mixer
- 7 H<sub>2</sub>SO<sub>4</sub> pH Adjustment

- 8 Alum Addition
- 9 Dissolved Air Flotation Unit
- 10 Sand Filters (2 in series)
- 11 Activated Carbon Filters (2 in series)
- 12 FOTW Sewer System
- 13 Sludge Handling and Storage
- 14 Sludge Filter Press

Figure 5: Simplified process Flow Chart of the Whiteman AFB IWTP

The "as built" IWTP design assumptions were identified during a review of the B-2 Support Facilities Industrial Wastewater Treatment Facility Construction Specifications and Bid Documents. The basis of design assumptions are presented in Table 3 below.

Contaminant or Design Influent Effluent Treat. Trea						
Parameter	Concentration mg/L	Waste Load ppd.	Objective mg/L	Unit		
Max. flow (system)		220 gpm	N/A			
Average flow		60 gpm	N/A			
pН	6.0-9.0		N/A			
Biochemical Oxygen Demand (BOD <sub>5</sub> )			N/A			
AFFF*	2,000	1,441		AFFF* Surge		
Chemical Oxygen Demand						
Suspended Solids	1,000	720	<1	Clarifier		
Heavy Metals	200	144	<10	Clarifier		
Oils/Grease	2,000	1,441	<10	DAF**		
Fuels	100	72	<10	DAF**		
Emulsified Oils	500	360	<10	DAF**		
Solvents	500	360	<10	Carbon Filter		
Phenols	25	18	<10	Carbon Filter		

<sup>\*\*</sup> Dissolved Air Flotation

Identification of the design specifications was necessary for the AL/OEB field team to perform the systematic engineering evaluation of both the IWTP process units and the industrial wastewater system. Analysis of raw industrial wastewater samples collected as part of the initial AL/OEBW IWTP study indicated that Whiteman AFB industrial wastewater had very low organic strength and low flows. Initial sample data indicates the IWTP may not normally be required for compliance with the NPDES permit. Comparison of the "as built" IWTP design values to the analytical values derived from samples collected during the March-April 1997 investigation are critical to understanding the problems and providing recommendations that are supportive of FOTW NPDES compliance, IWTP performance, future industrial wastewater management system upgrades, and to maximize the benefit derived from good environmental practices related to aircraft maintenance and flight support operations.

#### 3.3 Federally Owned Treatment Works (FOTW)

The FOTW's role in the management of the industrial wastewater system is to serve as a secondary wastewater treatment system for some industrial wastes (e.g., oil and grease, biological oxygen demand, pH) and to provide the last line of "defense" for compliance with the NPDES permit. The primary discharge requirements of the NPDES permit require compliance with the constituents and parameters identified in Table 4.

Table 4: NPDES Permit No. MO-0029378 Effluent Discharge Limitations, Effective Date: 1 June 1997					
Parameter	Unit	Daily Max.	Weekly Avg.	Mo. Avg.	
Flow	MGD	2.19		1.26	
BOD <sub>5</sub> June 1-Sept.30	mg/L		15	10	
Oct. 1-May 31 C.O.D.	mg/L		20	15	
June 1-Sept.30	mg/L	90		60	
Oct. 1-May 31	mg/L	120		90	
T. Susp. Solids	mg/L		20	15	
Oil/Grease	mg/L	20		15	
pН	SU				
Temperature	⁰F				
Total Copper	mg/L	.043		.043	
Total Lead	mg/L	.020		.020	
Total Zinc	mg/L	.150		.150	
Cyanide	mg/L	.022		.022	
Total Phenol	mg/L	.100		.100	
Total Silver	mg/L	.0082		.0082	
Ammonia as N					
June 1-Sept.30	mg/L	3		2	
Oct. 1-May 31	mg/L	4.5		3.5	

The principal "systems" operation problem posed to the FOTW that would threaten the ability to comply with the identified requirements is a surge or slug of oxygen demanding waste or a surge of oil and grease from a petroleum spill. The Whiteman AFB FOTW incorporates primary, secondary and tertiary treatment components within the sewage treatment plant' design. The FOTW consists of pairs of primary and secondary clarifiers, two high rate trickling filters operated in parallel, two anaerobic digestors, sludge handling facilities, and four constructed wetlands treatment ponds designed for effluent polishing and metals removal. Figures 6 and 7 provide an overview picture of the general treatment units and the constructed wetland.

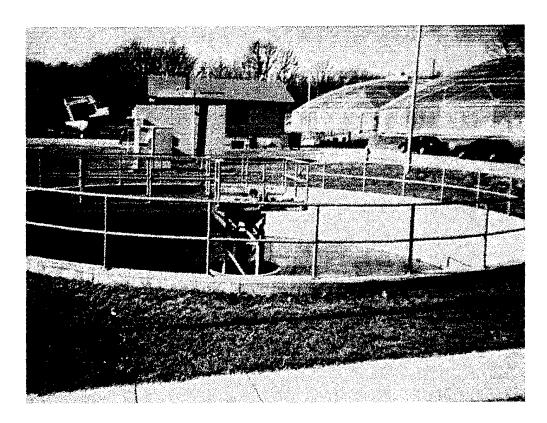


Figure 6: Photograph depicts an overview of the FOTW primary/secondary treatment units.

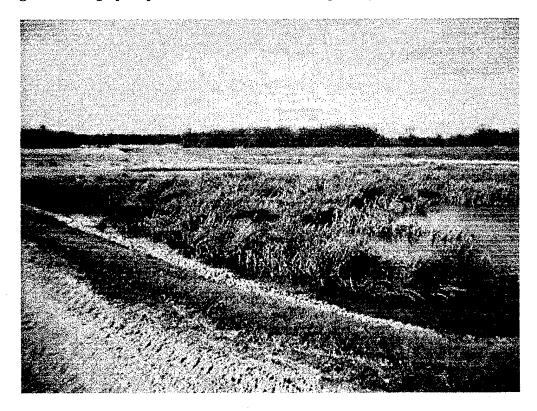


Figure 7: Photograph depicts one of four constructed wetland ponds that provide for tertiary treatment of wastewater at Whiteman AFB.

There are no treatment units at the FOTW that are specifically designed for the treatment of industrial wastes. The FOTW was not designed to respond to slugs of toxic or strong organic industrial wastes and petroleum spills. Those type industrial wastes can and have adversely impacted the FOTW. The primary surge or slug treatment capabilities at Whiteman AFB are maintained in the storage capacity of the AFFF storage tank and the IWTP equalization basin. Final characterization of the industrial wastewaters may indicate a need for secondary surge or slug treatment capabilities to be located at the headworks to the FOTW. Additionally, the average organic load on the FOTW is 760 pounds BOD<sub>5</sub> per day. This is significantly less loading than plant design and increases the FOTW's vulnerability to a serious surge of organics from industrial waste. If the plant were operating nearer the design load capacity of 3,150 pounds BOD<sub>5</sub> per day, it would be more capable to operationally respond to surges of organic loading from industrial wastewater.

## 3.4 B-2 Industrial Shops and Flight Operations Support

There are approximately fifty-one industrial shops supporting aircraft maintenance and flight operations at Whiteman AFB. Most major industrial shops primary mission is support of the B-2 Wing. The B-2 industrial shops having the greatest potential impact on the industrial wastewater system are the; 1) corrosion control facility, 2) structural maintenance and 3) jet engine maintenance. The principal industrial wastewater generated from these shops is floor wash water. Solvents, fuels, oil and grease, metals, and carbon filament compounds are typical contaminants that could be present in the wastewater generated from these and other shops supporting B-2 operations. Most shop operations have intensive waste minimization and pollution prevention programs in place. A "pharmacy" program for dispensing hazardous materials has also been established. Hazardous materials and wastes are normally strictly controlled and would not be released to the industrial sewer unless a spill or emergency occurred. Spill response equipment and intensive HAZMAT training has been provided to all B-2 industrial shop personnel. Industrial shops supporting the B-2 program are located throughout the flight line area.

# 3.5 Other Aircraft Industrial Shops and Flight Operations

Most industrial shops at Whiteman AFB principally provide support to the B-2 mission. However, several large shops provide aircraft maintenance and flight operations support for the tenant T-38 and A-10 fighter aircraft wings, as well as the Army helicopter squadron. Primary industrial activities not related to the B-2 are aircraft washing, hydraulic maintenance, and routine repair of T-38, A-10 and helicopter aircraft. The largest volumes of wastewater generated by these activities result from aircraft wash rack waste and floor washing. Solvents, soaps, oil and grease, and fuels are contaminants that can routinely be expected to be found in this wastewater. Most of the non B-2 related industrial shops are located near the southeastern most area of the

flight line. Figure 8 depicts a typical maintenance operation associated with the Apache helicopter aircraft.



Figure 8: Routine maintenance is performed on an U.S. Army Apache helicopter at building 52. Normally, very small volumes of wastewater are generated as a result of these and similar routine maintenance activities.

#### 3.6 Fire Protection Systems

Fire protection systems are an integral element of the industrial wastewater system and associated problems at Whiteman AFB. All industrial shop fire protection is based on the use of aqueous film forming foam (AFFF). Industrial wastewater is adversely impacted by AFFF in two ways; 1) it exerts a potential biochemical oxygen demand of approximately 20,000-35,000 mg/L, a very high strength wastewater that will severely damage FOTW operations, and 2) water based foams also create handling and mechanical hazards from foam piles and possible electrical shorts circuits. AFFF wastewater generated from spills, fire tests, building acceptance tests, false fire alarms, and real fire alarms may result in surges of high strength oxygen demanding wastewater within the industrial wastewater management system or may create foam piles that create other hazards. AFFF wastewater resulting from building acceptance tests has created the most difficult IWTP operation problems to date. An understanding of the fire protection systems at Whiteman AFB is necessary to characterize the greatest potential industrial wastewater system problems that may be experienced at the base.

Industrial wastewater handling problems that occur as a result of "foaming" are primarily managed at the influent structure to the FOTW with the addition of a foam control additive manufactured by G.S. Robins and Company. *DEFOAMER WAFB* has proven to be a very effective additive for control of AFFF foaming. *DEFOAMER WAFB* is composed of eighty-percent mineral seal oil and twenty-percent alkylphenol ethoxylate and works as a foam suppressant by increased surface tension. A copy of the MSDS sheet for *DEFOAMER WAFB* is included as Appendix 4. When the IWTP is operated, foaming problems are suppressed with a foam control additive manufactured by NalCo. No foam control system is in place at the confluence of the industrial wastewater system with the sanitary sewer.

Two brands of three percent AFFF are used for fire fighting at Whiteman AFB, 3M and Ansil. Both brands have similar, if not identical chemical and wastewater characteristics. Currently, only 3M product FC-203CF Light Water AFFF is purchased by the Whiteman AFB fire department. Manufacturer's Environmental Data information and Material Safety Data Sheets (MSDS) for FM-203CF are included in Appendix 5. The primary chemical ingredients of AFFF are water (approximately 70 percent), diethylene glycol butyl ether or DGBE (approximately 20 percent), amphoteric sulfate salt (< 5 percent), alkyl sulfate salt (< 5 percent), triethanolamine (< 1.5 percent), perfluoroalkyl sulfonate salt (< 1.5 percent), and tolyl triazole (< 1 percent). DGBE is identified as a toxic chemical. The chemical manufacturer recommended water exposure guideline is 35 mg/L. Prolonged or repeated over exposure may cause blood disorders, bone marrow depression, kidney effect, liver effects, and/or pulmonary edema. Inhalation and adsorption are the two primary human health pathways of exposure. According to the 3M Environmental Data Sheet a three percent solution of product FC-203CF in water exerts a BOD<sub>5</sub> of .35 g/g and a BOD<sub>20</sub> of .72g/g or 34,900 mg/L and 71,953 mg/L of oxygen demand respectively.

The basic fire protection system at Whiteman AFB consists of an alarm, AFFF storage tanks, water supply, AFFF makeup/mixing manifold, fire water supply pumps, fire water distribution lines and spray nozzles or delivery mechanism. There are six individual fire protection systems located in the flight line area. Each of the six fire protection systems is similar, but differs in size, alarm type, and spray distribution system. Each fire protection system has one or more raw AFFF storage tanks used for in-line makeup of firewater. At least two fire pumps charge four of the individual fire protection systems. Two of the fire protection systems are charged with domestic water pressure. Water is mixed with raw AFFF through a positive pressure manifold and in-line static mixer for all systems (See Figure 9).



Figure 9: Fire Protection System #1 AFFF firewater makeup manifold.

Each storage tank is currently filled with raw three percent AFFF, the bulk AFFF product mixture that is diluted with water through the manifold system with three parts AFF to ninety seven parts fresh water to provide fire protection foam. All six fire alarm systems incorporate the use of "thermister" cable, a temperature sensitive fire alarm detection wire. The overhead deluge fire protection lines of all Whiteman AFB fire protection systems is actuated by "thermister" cable detection alarms. All B-2 underwing deluge fire protection systems are actuated by ultraviolet/infrared detection sensors. The fire alarm systems at all B-2 facilities and buildings, also use 10 remote video cameras (See Figure 10) in each hangar for fire confirmation of fire alarms. A seventeen-second-response time exists for the fire alarm attendant to manually override actuation of a fire protection system at B-2 facilities in case of a false alarm. Table 5 provides basic technical information concerning each fire protection system at Whiteman AFB.

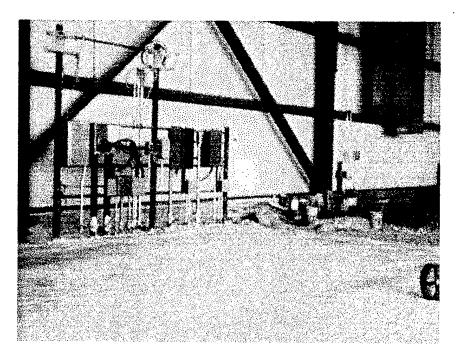


Figure 10: Mounting brackets for the B-2 hangar fire protection tele-video monitors are shown.

	Table 5: Wi	niteman Al	B Fire Pro	tection	Information	Sheet
System #	Description	AFFF Tank Cap. Gal.	Alarm Type	# Fire Pumps	Fire Pump Rate	Est. Max. Fire H <sub>2</sub> O Production
1	Corresion/Control, Hangar 9, BRA	10,000	T/V/uv-ir	4	2,500	333,000
2	B-2 Docks	3,000	T/V/uv-ir	-	-	100,000
3	T-38, Helicopter Hangar	800	T	0	Unk.	26,600
4	A-10 Hangars (5 bay)	1,200	T	4	1,500	39,600
5	Refueler Maintenance	800	T/V/uv-ir	1	Unk.	26,600
6	A-10 Hangar (3bay)	700	T	0	Unk.	23,300

A review of Table 5 indicates the largest volume of AFFF wastewater that could be discharged to the industrial wastewater sewer resulting from an individual fire is 333,000 gallons of dilute fire water, plus the foam generated by fire trucks, and the rinse water generated from cleanup. An AFFF release of this magnitude would generate a five-day biochemical oxygen demand load of approximately 96,924 pounds and a twenty-day biochemical oxygen demand of approximately 199,829 pounds. Since the FOTW is designed to treat a maximum capacity of 5,000 pounds BOD<sub>5</sub>/day, a worst case AFFF discharge event would result in a major NPDES permit violation unless the AFFF industrial wastewater is diverted to the 250,000 gallon AFFF storage tank and the 150,000 gallon IWTP equalization basin. Provided AFFF wastewater is diverted to these temporary storage facilities during a worst case event, NPDES compliance

should be maintained as long as the stored wastewater is not diverted to the FOTW at greater than approximately 2,000 pounds per day or about 5 gpm. Approximately fifty days of FOTW operation is required to work off a worst case AFFF discharge event and maintain compliance. If a greater safety factor is required by the Air Force, larger AFFF storage facilities are needed. Current AFFF wastewater storage capacity provides for an approximate twenty percent or 67,000 gallon reserve buffer of additional AFFF wastewater to store fire truck and clean up wastewater for a single worst case event.

#### 3.7 Jet Fuel Storage and Distribution

There are four fuel storage tanks located in the vicinity of the flight line at Whiteman AFB. Each of the four fuel tanks has a capacity of 10,000 bbls. or 420,000 gallons. Each tank is surrounded by a spill prevention, control, and countermeasures (SPCC) concrete lined retention levee to prevent unauthorized wastewater discharges to the storm or industrial wastewater collection system. Each SPCC levee retains 120 percent of the tank capacity and a manual diversion valve that can route retained wastewater to either the storm or industrial wastewater collection system controls discharges. Sampling and laboratory testing determines the appropriate course of wastewater disposal from these retention areas. There is a very low probability for a significant release of fuel from the four fuel storage tanks beyond the SPCC levees.

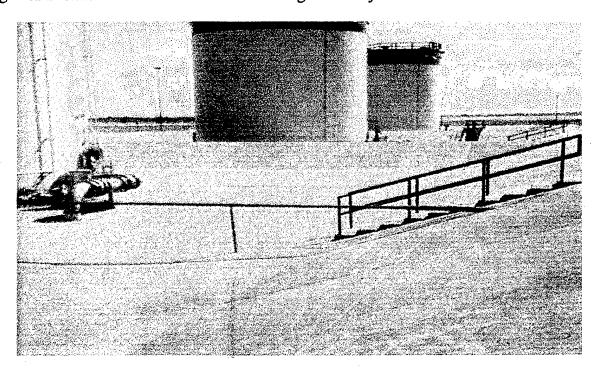


Figure 11: 10, 000 bbl. jet fuel storage tanks. Note wastewater diversion drain in background of the second levee.

Moderate size (500 to 5,000 gallons) fuel spills and leaks resulting from the distribution, loading and unloading of jet fuel represent a serious potential threat to the industrial wastewater management system. Jet fuel is pumped from the four storage tanks through a series of fuel distribution lines throughout the flight line. Numerous fuel hydrants are also located in underground pits throughout the flight line, especially within the B-2 dock area. Fuel spills from fueling and refueling planes are probably a less common source of petroleum releases than leaks. The coefficient of expansion for JP-8 is 75 psi/°F, consequently a temperature change of a few degrees exerts great stress on jet fuel distribution at pipe joints and pipe bends. It is believed that the greatest stress for leaks occurs within the fuel hydrants and pits on days when the temperature difference between ambient subsurface ground temperature and ambient air temperature is the greatest.

Nine significant fuel spills have been reported to the Fire Chief in the nine months proceeding March 1997. Other significant fuel spills or leaks are suspected to have occurred, but have apparently been unreported. Some unreported spills have been indicated by occasional slugs of petroleum and oil and grease in the raw influent to the FOTW.

#### **SECTION 4**

# INDUSTRIAL WASTEWATER SYSTEM OPERATION/PROBLEM ANALYSIS, SAMPLE DATA, and OBSERVATIONS

This section of the report presents sample data and observations obtained during the March/April 1997 Industrial Wastewater System Characterization Survey (IWSCS) and provide an analysis of the industrial wastewater system operations and problems. In order to simplify results and conclusions, this section of the report is divided into three parts. Section 4.1 provides information concerning sample collection locations and identifies the various industrial shops and wastewater contributors monitored at each sample location site. Section 4.2 presents the sample data and provides an analysis of the data by sample location. The final section, 4.3, provides an analysis of the IWSCS observations, information and sample data as it relates to the fire protection and jet fuel distribution systems.

#### 4.1 Sample Site Locations and Industrial Wastewater Contributors

Figure 12 is a general schematic (not drawn to scale) depicting the relative location of the industrial maintenance and flight operation support shops in the flight line vicinity of Whiteman AFB.

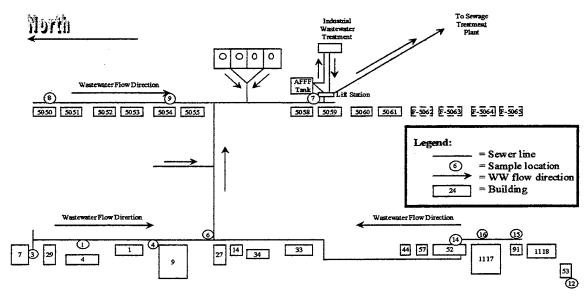


Figure 12. Industrial Sewer and Shops and Sampling Locations

A general description and key of the industrial shops associated with each location building number identified on Figure 12 are presented in Table 6. Also identified on the figure is the location of eighteen sample collection points utilized during the IWSCS. Figure 13 groups each sample collection location into a category or group that; 1) visually identifies the industrial activity with a sample collection location, 2) groups the industrial activity with other industrial shops and flight operations that are also monitored by samples collected at a common location, and 3) identifies sample collection locations that monitored a confluence of industrial waste streams throughout the survey period.

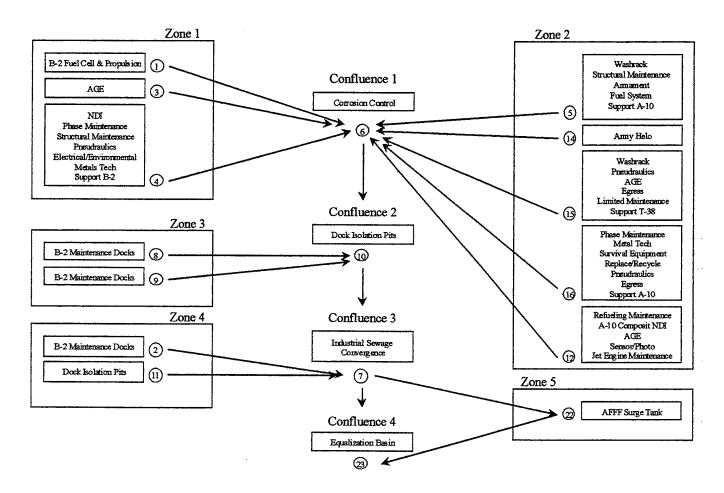


Figure 13: Simplified Shop/Wastewater Flow Diagram

Twenty-four hour composite samples or representative grab samples were collected from each sample location identified in Figure 13. Table 6 provides additional information associating the individual sample site location with the building number, other industrial shops common to the monitoring point and sample collection frequency.

Site#	Building/Description	Associated Industrial Shops	Sample Frequenc
1	1	B-2 fuel cell	dry
2	5056 & 5067	B-2 maintenance dock	1 day
3	7	Aircraft grounds equipment (AGE)	dry
4	9	Non-destructive investigation (NDI), phase, structural maintenance, pneudraulics, electrical, & metals tech support	4 days
5	118	A-10 aircraft wash rack, structural maintenance, armaments, fuel system support	3 days
6	27	B-2 corrosion control	8 days
7	5413	AFFF diversion, industrial wastewater convergence manhole	8 days
8	5050-5053	B-2 maintenance dock	3 days
9	5054-5055	B-2 maintenance dock	4 days
10	North Jet Drain	Service dock and isolation pits	4 days
11	South Jet Drain	Service dock and isolation pits	3 days
12	1125 &1119	A-10 refueling maintenance, A-10 composite NDI, AGE, photographic/sensor support, & jet engine maintenance	3 days
13	Site deleted* (Site 12)	See Site 12	N/A
14	52	Army helicopter limited maintenance hangar	dry
15	91	T-38 aircraft wash rack, pneudraulics, limited aircraft maintenance support, egress	2 days
16	1117	A-10 pneudraulics, phase, metals tech support, surveillance equipment	2 days
17-21	N/A	Sample site locations were assigned to blind QA/QC samples	N/A
22	5413	Raw industrial wastewater contained within the AFFF surge tank	grab
23	Equalization Basin	Raw industrial wastewater contained within the IWTP equalization basin	grab

# 4.2 IWSCS Sample Data and Analysis

Appendix 3 provides the Armstrong Laboratory analytical data sheet for each sample collected as a part of the Whiteman AFB IWSCS. The authors intensively reviewed the data sheets and a simplified data table presenting the primary information necessary to characterize and understand the industrial wastewater system was prepared. The simplified data tabulation is provided as Table 7.

<u>TABLE 7</u>: March 1997: Whiteman Air Force Base, Missouri Industrial Wastewater System Simplified Sample Data

03/24	03/23	03/22	03/21	N/A	00/20	03/22	03/21	N/A		03/23	03/23	05/21	03/01		03/28		Date
Site 6:	Site 6:	Site 6:	Site 6: Building 27- Corrosion Control	Site 5: Avg. Data Values	SIK U.	Site 5:	Site 5: Building 1118- Washrack, Fuel System Support A-10	Site 4: Avg. Data Values		Site 4.	Cita A.	NDI, Structural Maintenance, B2 Tech support	City A. Davildian TO	Site 3: Bldg. 7 Aircraft Ground Equipment (AGE)	Site 2: Bldg. 5056-5057 B2 Maintenance Dock	Site 1: Bldg. 1 B2 Fuel Cell	Location and Site#
19597	19173	19167	19164	Y/N	17171	19165	19161	N/A	10107	19108	10160	19184	1010		20497		Sample#
														Дуу		Dry	Flow
174	76	176	375	167	4,2	423	36	130	163	133	3	8			1480		COD mg/l
22	18	8	70	4.6	U	4	5	24	J.	2 5	16	o			1152		O&G mg/l
13	10	4	38	ယ	4	2	ယ	10	10	1,2		J			1088		l/Bw Hd.L
<b>^</b> 1	^	<u>^</u>	۵	5	4	× 000	3	<u> </u>	1	<u>^</u>	1	Δ	4		1.6		Ortho Phos.
<u>^</u>	<u>^</u>	<u>^</u>	Δ	7	4	14	3	<]	2	\ 	4	Δ			2.5		Total Phos. mg/l
3	Δ	29	TN	4	^	<1	<u> </u>	7	4	17	3	Z			۵		Surf. mg/l
<.010	<.010	<.010	NT	<010	<.010	<.010	NT	N/A	WA	N/A		Z			TCE 5; BOE 8.16		Complex Organics mg/l
.316	.304	.405	.303	704	.792	.547	.775	.304	.309	.29		.313			.486		Stron. mg/l
NSM	MSM	MSN	MSM	MSM	NSM	MSM	NSM	MSN	NSM	MSM		MSM			MSN		Metals mg/l

N/A	77/50	03/27	03/26	03/25	03/23	N/A	03/25	03/23	03/22	03/21	N/A	03/28	03/27	03/26	03/25	03/24	03/23	03/22	03/21	N/A	3 A A A	03/28	03/27	03/26	03/25		Date
Site 9: Avg. Data Values	SIE 3.	City O.	Site 0.	B2 Maintenance Docks	Site 9: Bldg. 5054-5055	Site 8: Avg. Data Values	Site 8:	Site 8:	Site 8:	Site 8: Bldg. 5050-5053 B2 Maintenance Docks	Site 7: Avg. Data Values	Site 7:	Site 7:	Site 7:	Site 7:	Site 7:	Site 7:	Site 7:	Site 7: Building 5413 AFFF manhole	Site of Avg. Data values		Site 6:	Site 6:	Site 6:	Site 6:		Location and Site #
N/A	20313	20212	10041	10001	19176	N/A	19795	19175	19169	19163	N/A	20486	20312	20049	19792	19598	19172	19166	19162	N/A		20465	20311	20048	19797		Sample#
																											Flow gpm
<16	01>		<u> </u>	30	123	570	NI	263	308	1140	129	31	236	NSR	66	74	N]	302	65	202		660	<u>\$1</u> 0	21	126		C'OD
1.5	2	,  -	_ 2		9	225	696	96	42	64	H	13	5		14	5	16	16	8	2/		3	3	83	8		O&G mg/l
1.5	7	}	NOK	Mon	<b>∞</b>	199	690	40	4	62	9	6	2		13	5	15	16	6	19		3	2	83	^		/gm Hd.L.
2	^		ــا د	-	ω	12	NT	8	11	18	1.42	<u>^</u>	^		2	1	NI	3	<1	^1		1	<1	<1	<1	y	Ortho Phos.
2	^		ا د	4	3	18	IN	8	11	34	1.8	<1	<1		4	1	IN	3	^			2	<1	<1	^1	3	Total Phos.
Δ	^	.   _	1	٠.	<u> </u>	<1.25	IN	1.25	1>	TN	9	^1	<1		1	1.5	NI	9	39	و		<b>^</b> 1	<b>^</b> 1	<1	1.5		Surf. Mg/l
<.010	<.010	×.010	<.010		<.010	<.010	BIT	<.010	<.010	<.010		<.010	<,010		TCE.006, m-Xylene .008, o-Xylene .005	<.010	<.010	<.010	<.010	<u> </u>		<,010	<.010	<.010	<.010		Complex Organics mg/l
.719	./68	.020	./61	2	1.470	563	IN	1.32	.655	.902	386	.397	.470		.325	.480	NT	.261	.385	,335		.408	.325	.321	.300		Stron. mg/l
NSM	NSM	IMICHI	NSM		MSM		NT	Zn-5;Cu-2.5, Al-20	MSM	NSM	MSM	NSM	NSM	MSM	MSN	NSM	MSM	MSM	MSM	NSM		MSM	NSM	NSM	MSM		Metals mg/l

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N/A	03/2/	3	30/20			03/24	N/A		03/28	03/27	03/26		03/25	N/A	0.00	8C/E0	03/20	37.	N/A	03/20	03/2/	03/26	03/25		Date
Site 15: Avg. Data Value	Site 15:	T-38 Maintenance & Washrack	Site 15: Blde 01	Site 14: Bldg. 52 Army Helicopter Wing		Site 13:	Site 12: Avg. Data Value		Site 12:	Site 12	Site 12:	Maintenance & A10 Composite Wing	Site 12: Bldg. 1125 &	Site 11: Avg. Data Value	NAW II.	Site 11.	Site 11. South Jet Drain		Site 10: Avg. Data Value	one IO:	Site 10:	Site 10:	Site 10: North Jet Drain		Location and Site#
N/A	2031/	10007	20051			19599	N/A		20489	20314	20057		19794	N/A	20107	20400	20000	20055	N/A	2048/	20315	20054	19793		Sample #
				Дŋy																					Flow
3731	7200	707	363			5320	1231		1030	65	149		3680	<10	11	i ê	ê		720	150	1290	СВС	<10		('OD')
230	Z	230	3			70	86		224	7	15		98	10.6	10	12	2		526	1497	26	25	98		O&G
19	N.	19	5			3	77		208	7	=		82	ડ	2	-	. 12		512	1459	24	23	82		l/att
Δ		-	-			130	- 89			2	2		265		_				Δ		_	<u>^</u>	265	mg/l	Ortho Phos.
<u></u>		1.2				108	74		<u>-</u>	2	2		290				_		4	^	<u>^</u>	<u>^</u>	290	mg/l	Total Phos
395	330	460					13			X)	13		N.I.	<u>^</u>	2	1			<1.25	Z	1.5	<u>^</u>	TN		Surf.
<100	NT	<.100				NT	<050	2.000	< 050	<.050	<.010		<.010	<.010	NI	<.010	<.010			<.50	Napthalene 76;	<.100	<.100	, ,	Complex Organics
2.787	.404	5.170			2		.321		100	349	391		.347	.627	.669	.636	.576		434	.377	.510	.415	.501	J.	Stron.
MSN	MSM	NSM			Cu-9.23, Pb-6.5, Zn-21	Al 130 B. 376			TATOLI	MSM	MSM	Zn-6.5	Cu-4.2, Pb-2.0,	MSM		NSM	MSM		MSM	NSM	MSM	NSM	MSN	,	Metak

TIT	1 _1		丁二	1 _1	1 _1					_	
03/23	03/23	03/26	03/26	03/28	03/28	N/A	03/28	03/27	03/26		Date
Reagent water	Whiteman AFB Potable Water Supply	Effluent WWTP	Influent WWTP	Site 23: IWTP Equalization Basin	Site 22: AFFF Surge Basin	Site 16: Avg. Data Value	Site 16:	Site 16:	Site 16: Bldg. 1117 A10 Support		Location and Site#
70221	70220	20053	20052	20491	20490	N/A	20504	20318	20064		Sample#
											Flow
<10	<10	13	347	270	660	15	25	<10	<10		mg/l
is	نۍ	1.68	54	66	30	43	120	8	1		O&G mg/l
<1	.3	1.52	14	50	30	39	115	2	<b></b> -		1/5w 1941.
<u>\</u>	.2	1.6	1.7	H	1.3	4		^	Δ		Ortho Phos. mg/l
<u>^</u>	.2	1.9	2.6		2.1	Δ	<u></u>	^	Δ		Total Phos. mg/l
NT	4	<u>^</u>	3.4	3.6	Δ	Δ	NT	<.1	TN		Surf. Mg/l
<.010	<.010	<.010	<.010	Ebz 8.3; Tol. 6.6; Xylene 25	TCE .065; BOE 26.5	<010	NT	<.010	NT		Complex Organics mg/l
<.005	.262	.297	.319	.423	.465	.243	.178	.286	.264		Stron. mg/l
MSM	MSM	NSM	MSN	MSM	MSM	NSM	MSM	NSM	MSM		Metals mg/l

NT: not tested
N/A: not applicable
NSR: no sample received
BIT: broken in transit
NSM: no metals of significance

Chemistry data presented in Table 7 can be grouped or characterized as belonging in categories. Some categories are; oxygen demanding contaminants (chemical oxygen demand or COD), oil and petroleum contaminants (oil and grease, total petroleum hydrocarbons or TPH), detergents (ortho-phosphate, total phosphate, surfactants), complex organic contaminants (pesticides, volatile, and semi-volatile organic) and metal contaminants (strontium and other heavy metals). Analysis of the sample data presented in Table 7 and a discussion of the related IWSCS observations and pollution prevention opportunities are grouped and presented by the five Zones and four confluence points depicted in Figure 13.

# Zone 1 and Confluence 1

Zone 1 is comprised of sample site locations 1, 3, and 4. No discharges were observed from buildings 1 and 7, the B-2 fuel cell or aircraft grounds equipment shops (sample site locations 1 and 3). All industrial wastewater sampled in this zone during the IWSCS was generated from building 9 (sample site location 4). Building 9 houses the non-destructive inspection, structural maintenance, pneudraulics, electrical instrument repair, and metals tech support shops supporting B-2 maintenance and flight operations. Twenty-four hour composite samples were collected on three consecutive days at sample location 4. Observed flow at the site was less than 1 gpm each day. No significant or unexpected industrial wastewater contamination was observed during the survey the sample location in Zone 1.

Closely associated with the Zone 1 shops, is the B-2 corrosion control shop at building 27. Twenty-four hour composite samples of the wastewater generated from building 27 were collected eight consecutive days at confluence 1. Two of the eight samples indicated excessive amounts of oil and grease were discharged to the industrial sewer. The pretreatment limits for oil and grease at Whiteman AFB are 50 mg/L. Wastewater generated from building 27 on 21 March and 26 March exceeded the established pre-treatment limit by about fifty percent for those two days. No likely specific source of the oil and grease was identified as an element of the pollution prevention opportunity assessments conducted at building 27. Two possible scenarios that may have resulted in the oil and grease excursions are parts cleaning, possibly using excessive detergent or improper disposal of a few gallons of oily wastewater.

The industrial wastewater generated at building 27 and within Zone 1 generally presents no wastewater treatment challenges. Good pollution prevention practices observed at these sites during the IWSCS undoubtedly contributed to lack of industrial wastewater problems identified in these areas. The sample data indicate only occasional oil and grease excursions occur and they had only minor impact to the industrial wastewater.

# Zone 2, Confluence 1 and 2

Samples collected within Zone 2 were obtained from sample site locations 5, 12, 14, 15, and 16. Zone 2 is comprised of the industrial maintenance shops flight operations located adjacent to the southwestern edge of the flight line. The shops within this area are generally associated with the tenant organizations at Whiteman AFB. Among the tenants are an A-10 wing and an Army helicopter squadron. T-38 aircraft maintenance and flight operations also are supported within this sector.

The industrial wastewater generated within Zone 2 presents the most serious routine industrial wastewater problems identified by the IWSCS. No industrial wastewater was observed to be generated from building 52 (Army helicopter maintenance), or sample location 14, during the survey. Sample location 14 was monitored daily, including weekends, and was always found to be dry. Maintenance and flight operations associated with the Army helicopter squadron had no impact on the industrial wastewater system during the course of the survey. Sample location 5 monitored discharges of industrial wastewater from building 1118. This sample point included wastewater generated from the A-10 wash rack, structural maintenance, armaments, and fuels system support shops. No problems are indicated by the chemical data collected during the 3 days this location was sampled. Sample locations 5 and 14 were the only sample points monitored within Zone 2 that did not indicate some routine problems with the management of industrial activities generating oxygen demanding contaminants, oil and grease, detergent or heavy metals.

Sample locations 12 and 15 had twenty-four hour composite samples collected. Flows were generally observed to be less than two gpm at these sample points. Analysis of observations and chemistry data related to each of these sample locations is presented separately.

Sample location 12 was selected to monitor industrial wastewater generated from the A-10 refueling maintenance activities conducted at building 1125. Industrial wastewater generated from the building 1119 industrial shops was also monitored at this sample point. Chemical data collected on five consecutive (Sample 19599 became sample location 12) dates indicate serious industrial wastewater problems occur as a result of the industrial maintenance and flight operations activities in this area. The data is presented in Table 8. Average data values for Chemical Oxygen Demand were 1,231 mg/L,

		Ta	ble 8: San	iple Site 1	2 Simplifie	d Data Tab	ile .		
Date	Sam. #	COD mg/L	O&G mg/L	TPH mg/L	O-phos. mg/L	T-phos. mg/L	Surf. mg/L	Organics mg/L	Metals mg/L
03/25	19794	3680	98	82	265	290	NT	<.01	
03/26	20057	149	15	11	2	2	13	<.05	
03/27	20314	65	7	7	2	2	NT	<.05	
03/28	20489	1030	224	208	<1	1.5	NT	<.05	
Avg.	4.44.6	1231	-86	77	68	74	13	<.05	
03/24	19599	5320	70	2	130	198	8	NT	

or five times stronger than normal industrial wastewater generated at Whiteman AFB during the survey. Oil and grease sample concentrations were as high as 224 mg/L and were consistently measured at levels higher than the allowable pre-treatment limit of 50 mg/L. Chemical data indicating the presence of detergents (e.g., ortho-phosphate, total phosphate, surfactants) also inferred that excessive oil and grease in composite samples collected 25 and 28 March may have been related to emulsions formed from the use of soaps. Ortho-phosphate concentrations in samples ranged from a low of <1 mg/L to 265 mg/L and correlated to high oil and grease concentrations in the samples. It is likely that cleaning operations (buildings 1125 and 1119) generating the industrial wastewater at these times used excessive amounts of soap. Use of excessive soap then emulsified oil and grease from grease traps or oil/water separators.

An observation made by the IWSCS field team also identified an operation and maintenance problem with the oil/water separator at building 1125 that certainly contributed to the oil and grease sample results obtained at sample location 12. Building 1125 supports the maintenance and operations of the refueling maintenance group. Refueling vehicles are maintained and refueling flight operations are supported by the work activities performed here. Industrial wastewater pre-treatment facilities include an oil/water separator, an above ground slop oil storage tank and an underground, 30,000 gallon capacity, AFFF surge tank. The underground oil/water separator at this facility contains two non-submersible motors that drive a slop oil lift pump and a flow diversion valve. Storm water intermittently drains into two sumps that contain the motors, occasionally submerging them and creating electrical short circuits that damage the equipment. This results in an oil build-up within the oil/water separator that eventually overloads the oil removal capacity of the separator and consequently causes industrial wastewater discharges to exceed the pre-treatment limits. Additionally, the above ground slop oil storage tank has a valve/drain plumbed to the 30,000 gallon AFFF surge tank to decant water. This valve configuration can result in a discharge of removed oil and grease back into the industrial wastewater system and should be corrected.

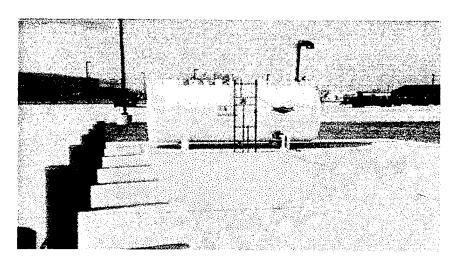


Figure 14: The building 1125 oil/water separator slop oil tank. Note the manual valve drained to the 30,000 gallon underground AFFF surge tank

In addition to sample locations 5, 12, and 14, industrial wastewater samples were also collected at sites 15 and 16 in Zone 2. Industrial wastewater sampled at these locations was generated from building 91 and building 1117, respectively. Samples collected from

	N. S.		Table 9:	Sample Si	ite 15 and	16 Simplified Data Ta	ble	74948830
Date	Site#	Sam.#	COD mg/L	O&G mg/L	TPH mg/L	Complex Organics mg/L	Strontium mg/L	Other mg/L
02/26	1.5	20051	262	220	10	TOF 0005	5.170	Al, Fe, Ni,
03/26	15	20051	262	230	19	TCE .0095	3.170	Zn; Surf
03/27	15	20317	7200	NT	NT	NT	.404	Phenol & Surf.
Average	15	N/A	3731	230	19	<.100	2.787	
03/26	16	20064	<10	1	1	NT	.264	
03/27	16	20318	<10	8	2	<.01	.286	
03/28	16	20504	25	120	115	NT	.178	
Average	16	N/A	15	43	39	<.01	.243	

site 15 is generated primarily by activities that support T-38 flight operations. Samples collected from site 16 are generated primarily by activities that support A-10 flight operations. Table 9 is a simplified presentation of the relevant chemistry data needed to assess industrial wastewater problems from these sample locations. A single oil and grease excursion above the Whiteman AFB pre-treatment limit was identified at sample location 16. Analysis of the data indicates the 120 mg/L oil and grease determination on 28 March may be due to disposal of a minor amount (<1 quart) of oil and grease through a drain. Chemistry data obtained from samples collected at site 15 indicate more serious problems.

Chemistry data for the two composite samples collected at site 15 indicate serious industrial wastewater problems. The highest value of chemical oxygen demanding contaminants was sampled here. High concentrations of oil and grease were detected on 26 March and visible volumes of oil and grease contained within the sample collected 27 March precluded testing for oil and grease. The presence of large amounts of surfactant in both composite samples indicate intensive use of detergents and cleaners associated with the T-38 maintenance and wash rack operations conducted at building 91. Detection of .0095 mg/L trichloroethene in sample 20051 may also indicate that hazardous materials are not properly disposed at this facility. Also, the detection of 5.17 mg/L strontium and significant concentrations of aluminum, iron, nickel and zinc indicate maintenance activities may occur that could result in exceeding recommended personal exposure limits (PEL) by aircraft maintenance workers and industrial wastewater system maintenance personnel.

All industrial wastewater generated within Zone 1 eventually flows to the B-2 corrosion control manhole (sample site 6). At this point, Zone 2 industrial wastewater converges with Zone 1 industrial wastewater and then flows east towards the B-2 fuel dock isolation pits. The high average contaminant (COD, O&G, & TPH) concentrations identified in composite samples collected at site 10 indicate that the values are most likely related to the industrial wastewater flow generated from Zone 2. Some fuel contamination at site 10 is also likely a result of a fuel hydrant leak detected during the IWSCS.

## **Zone 3 and Confluence 2**

Zone 3 includes sample sites 8 and 9, which are manholes that collect industrial wastewater generated from the B-2 maintenance docks located within the northeast section of the Whiteman AFB flight line. Sample site 8 received industrial wastewater from maintenance docks 5050 and 5051 and sample site 9 received industrial wastewater from maintenance docks 5052, 5053, 5054, and 5055. Twenty-four hour composite samples were collected at both sample sites 8 and 9 on four consecutive days. Samples were collected from site 8 on 21, 22, 23, and 25 March. Samples were collected from site 9 on 23, 25, 26, and 27 March. Flow from both sample sites was very low each sampling day, always < 1 gpm. The small volumes of industrial wastewater generated from the northeast maintenance docks must be factored into the analysis of contaminant impact on the Whiteman AFB industrial wastewater system.

Analysis of chemistry data collected from site 8 indicates that the maintenance activities generated small volumes of moderate strength industrial wastewater. Excessive oil and grease and detergent contamination was found in each sample collected at site 8. Chemical oxygen demand from site 8 wastewater was of greater strength than normally found in Whiteman AFB industrial wastewater. Average daily site 8 analyte values were; chemical oxygen demand-570 mg/L, oil and grease-225 mg/L, and detergents approximately 18 mg/L. The use of excessive detergents or floor washing may be responsible for oil and grease contamination. Two elevated strontium values also occurred at site 8. On 21 March, .902 mg/L strontium was detected and on 23 March, 1.32 mg/L was measured. Sufficient dilution of these values occurs within the industrial wastewater system to preclude a wastewater treatment problem, however undesirable exposure to strontium wastes may result from the type industrial or maintenance activity that occurred in building 5050 and 5051 on 21 and 23 March.

No unexpected contamination was identified in samples collected at site 9. Strontium was found to be 1.47 mg/L in a sample collected 23 March. However later samples fell below a value of < .76 mg/L. Average sample values varied in a range from < .760 mg/L to .400 mg/L.

Industrial wastewater flow from sample sites 8 and 9 converge at sample site 10 with industrial wastewater from the western flight line area before flowing south to confluence 3. Samples collected at site 10 contained visible oil and grease most days. Visible indications of oil increased each day sampled. A significant increase in the amount of visual oil occurred on 28 March. The field team reported this observation to Tim Alm of the Refueling Maintenance. A nearby underground B-2 fuel hydrant nearby was pressure tested and found to be leaking. The hydrant was then repaired and serviced.

## **Zone 4 and Confluence 3**

Sample sites 2 and 11 are located within Zone 4. No unusual or unexpected contaminants were identified in the three composite samples collected at site 11.

Only one composite sample was collected at site 2. It was collected on 28 March. The site 2 sample contained fuel. Contaminant concentrations were; chemical oxygen demand-1,480 mg/L, oil and grease 1152 mg/L, total petroleum hydrocarbon 1,088 mg/L. Some detergents were also present in the sample. Trichloroethene and 2(2-Butoxyetoxy)ethanol, the primary component of AFFF was also identified. No explanation is offered by the authors as to the cause of contamination found at site 2, however since no similar contamination was identified in the site 11 composite samples this may be an isolated event. Contractor related activities or a minor fuel spill treated with AFFF, might also be responsible for the irregularity.

Industrial wastewater from site 2 and site 11 converges with the main industrial sewage collection line just prior to sample site 7, the AFFF diversion and industrial wastewater confluence manhole. Twenty-four hour composite samples of Site 7 were collected for eight consecutive days. Chemistry data obtained from these samples present the most accurate picture of normal daily industrial wastewater characteristics. A simplified data summary table of the chemistry results is presented below for site 7.

		Ta	ble 10: Sa	mple Site	7 Simplifie	d Data Tal	ole		uren ak
Date	Sam.#	COD mg/L	O&G mg/L	TPH mg/L	O-phos. mg/L	T-phos. mg/L	Surf. mg/L	Organics mg/L	Metals mg/L
03/21	19162	65	8	6	<1	<1	39	<.010	
03/22	19166	302	16	16	3	3	9	<.010	
03/23	19172	NT	15	15	NT	NT	NT	<.010	
03/24	19598	74	5	5	1.5	1	1.5	<.010	
03/25	19792	66	14	13	1	4	1	<.010	
03/26	20049	NSR							
03/27	20312	236	5	2	<1	<1	<1	<.010	
03/28	20486	31	13	6	<1	<1	<1	<.010	
Avg	N/A	129	11	9	1.42	1.8	9	<.010	

Analysis of the analytical data obtained from site 7 indicates that industrial wastewater at Whiteman AFB is uniform in nature and of relatively weak strength when compared to industrial wastewater generated from major commercial airport facilities. The chemical oxygen demand and oil and grease concentrations found in samples at site 7 were less than the strength normally found in domestic sewage. Similar results were found for detergents and complex organic contaminants. No unusual or unexpected heavy metals contamination was identified in any of the site 7 samples. The data indicate that normal industrial wastewater generated at Whiteman AFB does not present a problem for treatment at the

FOTW. The data also indicate that under normal conditions there is no need to operate the IWTP for treatment of industrial wastewater.

# **Zone 5 and Fire Protection Systems**

Zone 5 is the industrial wastewater AFFF surge basin, which is also sample site 22. In the event of a fire alarm the IWTP/sanitary sewer lift station is designed to automatically shut down. If a fire alarm occurs, the system is designed for industrial wastewater and fire protection water to gravity flow to the manhole at sample site 7, until approximately 3 feet of head is overcome due to shut down of the IWTP/sanitary sewer lift station. At that point, the combined wastewater will gravity flow through a pipe to the 250,000 gallon AFFF surge tank. Wastewater contained within the AFFF tank must be pumped to the IWTP effluent lift station where it is diverted to the 150,000 gallon equalization basin for treatment at the IWTP or pumped to a wet well and lift station that primes a sanitary sewer force (pressurized) trunk line. The result of this configuration is a combined AFFF surge tank/IWTP equalization basin industrial wastewater/fire water total system surge capacity of approximately 400,000 gallons. 400,000 gallons is sufficient retention capacity for combined firewater/industrial wastewater flow for a single worst-case fire event. Such an event would generate approximately 333,000 gallons AFFF fire protection water, fire truck AFFF (estimated < 35,000 gallons), an unknown quantity of clean up water, and normal daily industrial wastewater flow (estimated < 10,000 gpd). It seems reasonable that sufficient industrial wastewater surge capacity exists for a one-time event.

Other situations are known to occur at Whiteman AFB that might also impact the normal available firewater/industrial wastewater flow surge capacity. Seven systematic events occur that could exceed or bypass the industrial wastewater system surge capacity. These events are:

- **Bi-annual testing** of the individual fire protection systems to ensure compliance with National Fire Protection Standard 25 (NFPA 25).
- Acceptance testing (fire protection system demonstration test is required by contract) of a B-2 maintenance dock or hangar.
- Multiple fire events
- Diversion of industrial wastewater to the AFFF surge tank or equalization basin for treatment at the IWTP or waste load leveling and control at the FOTW.
- Submergence of the AFFF surge tank manway entrances by storm water.

- A fire alarm system failure to automatically or manually divert fire protection wastewater to the AFFF surge system.
- Any combination of the above events

A short description and discussion of historical issues and information concerning the events that could damage or result in exceeding the industrial wastewater system surge capacity is provided below:

- NFPA 25 fire protection testing: NFPA 25 compliance testing is conducted every two years on all fire protection systems at Whiteman AFB. The plumbing shop of the CES is responsible for the testing and normally coordinates this effort with the fire protection squadron. A single NFPA 25 test does not normally discharge more than 5 percent of the available firewater from any fire protection system. However, cumulative tests conducted on consecutive days could temporarily reduce the available AFFF/industrial wastewater surge capacity significantly.
- Acceptance testing (fire protection system demonstration test is required by contract) of a B-2 maintenance dock or hangar: B-2 maintenance hangars constructed during the early phases of the B-2 program experienced difficulties in meeting the requirements of fire protection acceptance tests. Each test could result in the generation of 100,000 to 150,000 gallons of AFFF fire protection wastewater. In the past, these tests were often performed five or six times at each new hangar, Usually the tests were performed within one to two weeks of each preceding test before the contract requirements were met. Acceptance testing has improved and become more efficient, however wastewater generated form these activities has resulted in NPDES compliance and operation problems with both the IWTP and the FOTW. Only two B-2 hangars are currently incomplete and still require acceptance testing.
- Multiple fire events: Determination of the probability of multiple fire
  events occurring simultaneously or sequentially is not within the scope of
  this report, however, the possibility exists for such an event. This report
  used computations of waste loads and system capacities that were
  calculated using single event/worst case assumptions. Multiple or
  sequential fire events could create hydraulic demands for AFFF/industrial
  wastewater surge capacity than those estimated.
- **Diversion of industrial wastewater** to the AFFF surge system or equalization basin: Industrial wastewater has been diverted to the AFFF surge system many times in the past. Diversion of industrial wastewater

to this system reduces the system surge capacity temporarily by a like volume. Industrial wastewater diversion will occur again (most likely during summer periods) in order to control wastewater loads upon the FOTW.

• Submergence of the AFFF surge tank: Entrance to the AFFF surge tank is not water proof. Major storm events frequently generate sufficient volumes of storm water to submerge the AFFF surge tank area (See Figure 15). Surge capacity is reduced during these periods and the FOTW is more vulnerable to damage from a fire protection event in these periods.

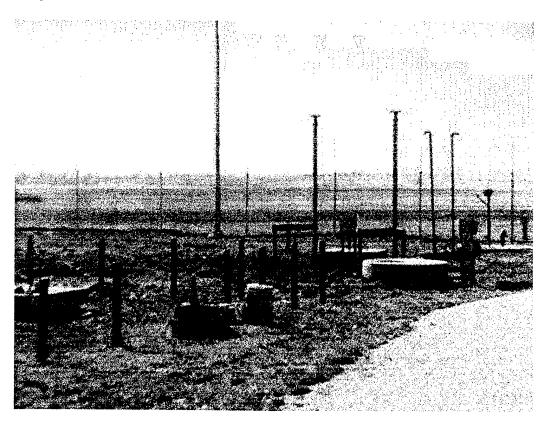


Figure 15: This photograph is of sample site 7 (note reflector cone). The vents in the background background are associated with oil/water separator. The control panel of the lift station and an AFFF surge tank manway are also visible in the photo. Note that storm drainage slope to this general area.

Fire alarm system failure to divert fire protection wastewater: The fire
alarm system was designed to actuate shut down of the primary industrial
wastewater lift station near the AFFF surge tank in order to divert fire
protection wastewater to the AFFF surge tank. The telemetry of the
system is damaged and requires repair to function properly. Currently,

industrial and fire protection wastewater must be diverted to the AFFF surge tank manually in the event of a fire protection event.

 Any combination of the above events: Combination of any of these events will act both cumulatively to reduce AFFF fire protection/industrial wastewater surge capacity.

A single grab sample of wastewater was collected from the AFFF surge tank or site 22 on 28 March. Chemical oxygen demand, oil and grease, total petroleum hydrocarbon concentrations were elevated above normal Whiteman AFB generated industrial wastewater. 2-2(butoxyetoxy)ethanol or BOE, the primary component of AFFF, was also found in the sample. The BOE concentration was 26.2 mg/L or about .0026 of one percent. A standard AFFF solution would contain about .6 of one percent BOE or roughly 230 times more BOE than concentrated in sample 20490. If agitated the site 22 industrial wastewater would result in minimal foaming problems. No significant threat would be presented to operation of the FOTW or to NPDES compliance by discharge of the 28 March AFFF wastewater to the domestic sewer for treatment at the FOTW,

# Confluence 4 and the Jet Fuel Distribution System

Confluence 4 is the IWTP equalization basin or sample site 23. Industrial wastewater contained in the equalization basin normally flows through sample site 7, then through a buried 100 gpm type B oil/water separator (OWS #5413), and finally the industrial wastewater is pumped from a 250 gpm lift station. When the diversion valve to the sanitary sewer is closed, industrial wastewater is discharged to the IWTP equalization basin or site 23.

A secondary industrial wastewater flow route to the IWTP equalization tank exists. This flow route is through the AFFF diversion pipe at sample site 7, through the AFFF surge tank, through the AFFF lift pump to the IWTP effluent wet well, and then through the effluent lift pumps and a manual flow diversion valve to the equalization basin.

Samples collected from the IWTP equalization basin exhibit the characteristics of normal Whiteman AFB industrial wastewater except for a 66 mg/L concentration of oil and grease. The elevated oil and grease value was not unexpected, since the main industrial wastewater lift pump immediately following OWS #5413 has a constant rate capacity of 250 gpm that exceeds the design flow of the oil/water separator by a factor of 2.5. The basic design of the equalization basin will also tend to concentrate floating oil and grease. The materials of construction (e.g., concrete), size of the equalization tank, its nature to accumulate oil and grease that precludes free oxygen exchange, and the potential accumulation of wastewater that may contain significant oxygen demanding contaminants creates a potentially hazardous situation for IWTP workers. Oxygen devoid atmospheres that are both corrosive and

potentially explosive may occur within this tank. Toxic gases (e.g., H<sub>2</sub>S) may also be contained with in the tank.

The design purpose of OWS # 5413 was to provide the primary oil and grease removal capability for the industrial wastewater system before discharge to either the sanitary sewer system or IWTP. At least three problems prevent the unit from achieving that purpose. They are:

- OWS hydraulic flow limits of 100 gpm and hydraulic demand of >250 gpm at the lift station
- underground construction and burial depth >30 feet
- lack of a defoamer system

No adequate fuel or oil spill removal capability presently exists to manage spills or fuel leaks. An example of this difficulty is no practical capability to remove fuel entering the industrial wastewater system from the observed fuel hydrant leak near sample site 10. The only operational fuel/oil removal management capability that exists within the entire wastewater treatment system is the primary clarifier at the FOTW. Prevention of fuel spills and detection of fuel leaks are critical to maintaining compliance with the Whiteman AFB oil and grease pretreatment requirements.

# **SECTION 5**

## **CONCLUSIONS and RECOMMENDATIONS**

### 5.1 Conclusions

The Whiteman AFB industrial wastewater system is a complex network that addresses dynamic problems. The general character of the industrial wastewater generated and sampled at Whiteman AFB during the survey is; small to very moderate flow rates (estimated 10-30 gpm), low strength or very small organic waste loads, and normally uniform in nature. The conclusions and recommendations associated with this network are best presented as groups of related and interdependent problems. For purposes of this report the industrial wastewater system problems are addressed as related to either:

- General characteristics of the industrial wastewater system,
- Fire fighting systems,
- Fuel storage/distribution system,
- B2 mission support,
- Tenant wing support, or
- Industrial wastewater treatment plant and management system

With respect to each of the above areas, conclusions have been identified. The conclusions are as follows:

### General Characteristics of the Industrial Wastewater System

- Industrial wastewater flow at Whiteman AFB is extremely low (< 10 gpm) during normal operations.
- Samples collected during the survey indicate no routine industrial wastewater contamination occurs from the use of chlorinated or complex organic chemicals.
- Generally the strength of the industrial wastewater generated at Whiteman AFB is less than that of domestic sewage.
- The industrial wastewater survey was conducted during a dry period and provides a very accurate assessment of the real industrial wastewater issues.
- Survey samples are believed to be the most representative possible and reflect the full strength industrial wastewater normally generated at Whiteman AFB.
- Also, no indication of the presence or absence of infiltration within the industrial wastewater collection system can be inferred from the survey results.

## **Fire Fighting Systems**

- The most likely cause of past and future hydraulic surges of industrial wastewater are either a fire alarm (false or real) or a test of the fire fighting systems themselves.
- Large volumes (>330,000 gallons) of industrial wastewater generated by one of the five separate fire fighting systems represent the single most serious threat to the successful operation of the industrial and sanitary wastewater treatment systems, as well as a likely cause of non-compliance with the NPDES Permit requirements.
- Many of the past operational problems experienced at the Whiteman AFB IWTP are related to fire alarms and tests of the fire fighting systems.
- An industrial wastewater system surge capacity of approximately 400,000 gallons is required to manage the worst case hydraulic/organic loading industrial wastewater system problem for a single fire alarm or fire test event.

# Fuel Storage/Distribution Systems

- Spills or leaks of jet fuel to the industrial wastewater collection system represent a threat to proper operation of the industrial and sanitary wastewater treatment systems.
- Numerous small spills and leaks of jet fuel to the industrial wastewater collection system have caused some past operational problems at the IWTP.
- A common cause of oil and grease discharges to the industrial wastewater collection system is due to excessive use of soaps or surfactants when washing and maintaining aircraft.
- In general, operation and maintenance of spill control and containment facilities is effective.
- A fuel leak was identified during the IWSCS at an underground fuel hydrant near the blast shield and north jet drain manhole (site 10). A leak was suspected in the area as a result of field observations made by the AL/OEB field team. Modification of the standard fuel distribution line test by the CEV/fuels group confirmed the suspected source of the fuel.

## **B2 Mission Support and B2 Operations**

- With the exception of activities that occurred at corrosion control, the site 8
  maintenance docks, the site 2 maintenance docks and the blast shield/north jet drain
  area, the B2 mission support activities and B2 operations had a minimal impact upon
  the character, volume and nature of the industrial wastewater generated during the
  industrial wastewater characterization survey.
- Sample data indicated that sample site 2 (buildings 5056-5057) maintenance nose docks
  released fuel and organic wastes and solvents to the industrial sewer on 28 March 1997.
  Analysis of the data indicates the event was likely due to improper or unauthorized
  disposal of fuel and hazardous materials to the sewer.

- Review of the sample site 6 data collected from the (building 27) Corrosion Control area identified a routine problem involving the release of oil and grease.
- Information derived at the sample site 8 (buildings 5050-5053) B2 maintenance docks identified recurring releases of oil and grease. Sample data indicate the cause of the oil and grease release is likely related to the use of excessive or inappropriate soaps during routine maintenance activities (suspect floor washing).

## **Tenant Wing Support and Operations**

The most serious routinely recurring activities that adversely impact the character of industrial wastewater generated at Whiteman AFB results from tenant facilities and the refueling maintenance at building 1125.

- Samples collected and analyzed during the industrial wastewater characterization survey indicate that Tenant Wing operations and support have the most significant adverse impact on the nature and quality of routine industrial wastewater.
- Industrial wastewater collected at sample site 12 and flowing from (buildings 1125 and 1119) the A10 Composite Wing and Refueling Maintenance Squadron generate excessively strong industrial wastewater from routine operations. IWSCS observations and chemistry data indicate that pollution prevention activities should be considered for implementation at these buildings. Routine operational procedures that occur in these buildings should be reviewed and improved with respect to industrial wastewater management.
- Analytical data collected at Sample Site 15, (building 91) the T-38 maintenance and
  wash rack area, have problems similar to those noted at Sample Site 12. Chemistry
  data indicate the industrial wastewater management problems generated form this area
  are severe.

# **Industrial Wastewater Treatment Plant and Management System**

- Normal industrial wastewater strength and flow is insufficient to justify continued operation of the Industrial Wastewater Treatment Plant.
- Analysis of the information obtained from this survey and information obtained as part of the Whiteman AFB Industrial Wastewater Treatment Plant Characterization and Analysis, May 1997, indicate that modifications to both the IWTP system and IWTP units need to be made.
- The IWTP equalization basin functions as an effective industrial wastewater surge protection unit, but is ineffective as a unit for normalization of industrial wastewater characteristics.

### Recommendations

A number of Whiteman AFB wastewater management issues and questions can be resolved by using the information presented in this report. Recommendations designed to address general and specific issues frequently raised by Whiteman AFB and Air Combat Command environmental management personnel are framed as responses to the following questions.

- Should the IWTP be used to treat industrial wastewater and if so when?
- What IWTP modifications are needed to assure safe and efficient operation of the IWTP?
- What industrial wastes can and cannot be treated by the Whiteman AFB IWTP?
- What improvements to the fire protection and industrial wastewater system are needed to effectively manage releases of fire protection wastewater?
- Is there sufficient oil and grease removal capacity within the industrial wastewater collection system?
- What pollution/prevention initiatives would benefit the Whiteman AFB industrial wastewater management program?
- Which industrial shops have the greatest impact on industrial wastewater at Whiteman AFB?
- What can be done to improve and assist the control and manage foam within the industrial wastewater system at Whiteman?
- Are modifications to the Whiteman AFB NPDES permit needed?
- What other problems need to be addressed within the Whiteman AFB industrial wastewater management system?

Recommendations in response to these issues are presented below:

# Should the IWTP be used to treat industrial wastewater and if so when?

The IWTP is not needed to treat the industrial wastewater presently generated at Whiteman AFB. It is the recommendation of this report that the IWTP be modified to address several key operation and safety issues. The IWTP should be maintained on stand by and in operable condition to supplement industrial waste treatment capacity for treatment of complex and chlorinated organic contaminants and heavy metals wastes that could be generated as a result of future B-2 maintenance and flight operations support.

# • What IWTP modifications are needed to assure safe and efficient operation of the IWTP?

The principal IWTP safety issues involve hydrogen sulfide emissions, noxious odors and chemical storage and handling. Portable hydrogen sulfide monitors (e.g., Draeger Tubes)

and training in their use should be provided to the plant operators and maintenance personnel.

The IWTP ventilation system should be analyzed and improved to remove noxious odors and hydrogen sulfide gas from the building.

The use of sulfuric acid for pH adjustment should be discontinued. Hydrochloric acid should be restored as the acid used for pH adjustment.

The bulk chemical storage facilities should be modified to prevent contact of reactive chemicals (acid spill containment separated from alkaline spill containment) in the event of a chemical spill or chemical storage tank failure. The IWTP spill prevention and countermeasures plan should also be updated to reflect these modifications and operations changes.

Incorporation of the dissolved air flotation unit within the IWTP treatment scheme adds a difficult set of operational problems when managing AFFF wastes. The normal IWTP treatment scheme should incorporate only the use of the settling, sand and carbon filtration treatment components of industrial wastewater treatment system.

The IWTP is principally designed to remove heavy metal and complex organic contaminants from industrial wastewater. No monitoring devices or system to detect high strength organic and heavy metal wastes exists within the industrial wastewater collection system. Installation of automatic recorders and specific ion detectors, conductivity meters, etc., at the industrial wastewater confluence points would improve information for management of the industrial wastewater.

### • What industrial wastes can and cannot be treated by the Whiteman AFB IWTP?

Normal or routine industrial wastewater generated at Whiteman AFB does not require treatment at the IWTP. Whiteman AFB industrial wastewater that does not contain alcohol (AFFF contains approximately 20% OH), > 50 mg/L oil and grease, or AFFF can be effectively treated for removal of heavy metals and complex organic contaminants at the IWTP, provided the noted safety concerns are addressed.

# • What improvements to the fire protection and industrial wastewater system are needed to effectively manage releases of fire protection wastewater?

Numerous industrial wastewater system improvements are needed to improve effective management of fire protection wastewater. Principal recommendations to address this need are as follows:

1) Develop a fire protection system testing communications plan. The plan should establish a set of procedures to ensure good communication, cooperation and

coordination between the fire department, FOTW operators, fire test plumbers, B-2 maintenance hangar construction contractors, and the B-2 hangar acquisition officials.

- 2) Institute repairs to the B-2 fire alarm system that will enable all fire sensors to communicate to the fire alarm control room and shut the industrial wastewater lift station off automatically to divert fire protection wastewater to the AFFF surge basin.
- 3) Improve drainage in the vicinity of the AFFF surge tank. Divert floodwater away from all points that allow entry into the industrial wastewater surge protection system.
- 4) Brief top management of the 509<sup>th</sup> Bomb Wing on the potential operation and NPDES compliance consequences of sequential fire protection system testing and multiple fire events. Communication of the information will enable cost-effective decisions related to the need for additional AFFF surge protection capacity and the likelihood of a multiple fire event.
- 5) In the event that the risk determination of a multiple fire event requires additional AFFF surge protection capacity, it is recommended that the surge tank facilities be constructed above ground.
- 6) Full strength fire protection wastewater diverted to the AFFF surge tank or IWTP equalization basin should be introduced to the industrial wastewater collection system for treatment at the FOTW at a rate of no more than 5 gpm.

# • <u>Is there sufficient oil and grease removal capacity within the industrial wastewater collection system?</u>

No effective oil and grease removal capability exists internal to the Whiteman AFB industrial wastewater collection system. An oil/water removal system or separator is needed to provide fuel leak and spill protection for both the FOTW and IWTP. An above ground parallel or inverted plate oil/water separator with a capacity of approximately 300 gpm is recommended for construction. Joint installation of a defoaming unit prior to wastewater entry to the OWS would enhance the operational capability of the unit. Since the existing oil/water separator at building 5413 it can not be effectively serviced due to its depth, it should be circumvented and abandoned.

# • What can be done to improve and assist the control and manage foam within the industrial wastewater system at Whiteman?

In addition to installation of a defoaming unit at the recommended oil/water separator, awareness training concerning the adverse impact of AFFF on operation of the industrial wastewater management system is likely to be very beneficial. Instructions for industrial wastewater foam control could be provided with the awareness training.

# • Which industrial shops have the greatest impact on industrial wastewater at Whiteman AFB?

Activities related to testing fire protection systems and the air craft maintenance and flight operations support shops associated with tenants occupying buildings 1125, 1119, and 91 have the most routine and significant adverse impact on the Whiteman AFB industrial wastewater management facilities.

The most significant B-2 industrial shop impact on the nature of industrial wastewater observed by the IWSCS team occurred at site 2, building 5056-5057 on 28 March 1997. This event is discussed as part of Zone 4, presented within Section 4.

# • What pollution/prevention initiatives would benefit the Whiteman AFB industrial wastewater management program?

The pollution prevention initiatives that will have the greatest benefit for the Whiteman AFB industrial wastewater management program are outlined in Appendix 6. Pollution prevention opportunities identified for industrial shops located at buildings 1125, 1119, and 91 will have the most immediate positive benefit on industrial wastewater.

## • Are modifications to the Whiteman AFB NPDES permit needed?

Non-utilization of the existing IWTP could be considered a violation of the operating conditions of NPDES permit MO-0029378. Use of the IWTP as currently configured is not recommended. The appropriate State of Missouri regulatory agency administering the NPDES permit should be advised of the current IWTP status and consulted for direction with respect to any needed permit modifications.

# • What other problems need to be addressed within the Whiteman AFB industrial wastewater management system?

- $I\square$  Small flow measuring devices, such as a 30° V-notch weir, should be installed at the confluence points throughout the industrial wastewater system.
- 2□ If an above ground oil/water separator is constructed upstream of the sanitary sewer it should also incorporate a flow measuring device.
- 3□ Installation of inset sensors at key confluence points for measurement of specific conductance, pH, chlorides, selected metal ions would improve internal monitoring and management of industrial wastewater contaminants at their source.

The historic problems of industrial wastewater management at Whiteman AFB are readily solvable. Some additional equipment and technical changes are required to achieve satisfactory management and treatment of industrial wastewater at Whiteman AFB. Proven practical technologies and systems exist to address most of the pressing technical issues confronting the

industrial wastewater system. Many of the problems observed by the field team during the survey are related to "human factors". Management initiatives can provide considerable benefits requiring minimal expenditures towards solving some of the problems. Two general management areas that can improve industrial wastewater handling at Whiteman AFB are 1) better communication of issues and specific actions that cause industrial wastewater problems at the base and 2) improving cooperation between flight operations and flight support units (e.g., communicate and coordinate fire alarm acceptance testing six to eight weeks in advance).

# **SECTION 6**

# LIST OF REVIEWED INFORMATION and REFERENCES

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# APPENDIX A

17 March 1997 Whiteman AFB, Missouri Industrial Wastewater System Characterization Survey In Briefing Outline

# Whiteman AFB, Missouri Industrial Wastewater System Characterization Survey In Briefing Outline 17 March 1997

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Participants/Introduction:

2.0	Project purpose: Review Whiteman AFB industrial wastewater system, identify problems and alternatives, and develop a plan to address issues of significance.
3.0	Initial Findings:
3.1	Industrial wastewater not as predicted
3.2	IWTP over designed
3.3	IWTP design impracticalities identified
3.4	NPDES permit compliance is tentative until industrial wastewater system and treatment system better understood
3.5	AFFF/industrial wastewater impact assessment needed to complete analysis
4.0	Current Investigation Purpose:
4.1	Sample/Analyze/Characterize industrial wastewater
4.2	Understand AFFF impact on industrial wastewater system
4.3	Develop a basis to make predictive changes of wastewater character
4.4	Develop final recommendations for modifications/additions to Whiteman AFB conceptual industrial wastewater treatment management system.
5.0	AL/OEB Expectations
5.1	Organized to support wartime mission with peacetime contract support

Program designed to collect samples/develop information to characterize industrial

wastewater with current operations and anticipated future changes.

Effort is focused on being responsive and providing correct answer

AL/OEBW team organized into three groups

one investigation team

• two sample teams

# APPENDIX B

4 April 1997 Whiteman AFB, Missouri Industrial Wastewater System Characterization Survey Out Briefing Outline

# Whiteman AFB, Missouri Industrial Wastewater System Characterization Survey Out Briefing Outline 4 April 1997

- 1.0 Participants/Introduction
- 2.0 Project purpose: Review Whiteman AFB industrial wastewater system, identify problems and alternatives, and develop a plan to address issues of significance.
- 3.0 Expectations: Review process is continuing, sample collection efforts were successful, pollution prevention opportunity assessments of industrial shops are near completion and the survey has established a direction to the process that will enable successful industrial wastewater system management.

# 4.0 Initial Findings:

- Industrial wastewater is a system of dynamic problems. Historical source of many issues is related to Whiteman AFB expanding and changing mission.
- Design assumptions for wastewater characterization not representative of current industrial waste streams.
- Processes generating industrial wastewater have significantly changed and are still changing.
- Hydraulic/organic wastewater characteristics appear to be very low flow and weak strength. However the industrial wastewater character and nature is subject to rapid change due to fuel spills, fire alarms, and industrial shop activities.
- Some industrial wastewater treatment plant (IWTP) design characteristics are impractical (e.g., volume indicator NaOH tank, chemical storage tank layout, simplicity of operation).
- IWTP requires sophisticated operation and management. Upgrade needed for operator training and analytical/operational control testing.

### 5.0 "Get Well" Plan

- Initiate industrial wastewater pretreatment controls
- Schedule routine wastewater characterization/treatment study
- Initiate IWSCS recommended corrective action

# APPENDIX C

17 March 1997 Whiteman AFB, Missouri Industrial Wastewater System Characterization Survey Sample Data Tables

# WHITEMAN PROJECT 17

# DATA SUMMARY FORM SEMI-VOLATILE ORGANICS (cont'd) Wastewater Samples (ug/L)

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# DATA SUMMARY FORM SEMI-VOLATILE ORGANICS Wastewater Samples (ug/L)

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Some common   Principles   Pr	,	NT			<u> </u>	-	160	15		S\$07076	1			2000	5 6	-		=	1 2.Dichlorobenzene	ا
Somple Amenical   100000000000000000000000000000000000	E EPA METHOD608	1	EE EPA ME IHOUGE	1		18507018	200			070000	1	٠.			â	-		Z	Dibenzo(a h)anthracene	ŝ
Surphy   Manufacture   Manuf	E ETA MELTICUOTO		E EDA METHODO	-		7020707	ARCENT				ABSEN		i		ABSE	•	PA METHODS	SEE E	Dieldrin	
Sample American   17/10/20/20/20/20/20/20/20/20/20/20/20/20/20	E EDA METUODOS		EE EPA METHODE			_ !	ABSENT				ABSEN		!		ABSE	œ	PA METHODE	SEE E	4,4-DDT	
Supplementarial   Principle	E EPA METHODEON	-	EE EPA METHODE	!	_ !		ABSENT		_		ABSEN				ABSE	-	PA METHODE	SEEE	4.4-DOE	
Sample Ambient   177,254	E EPA METHOD608		EE EPA METHODE	j			ABSENT				ABSEN	-	·		ABSE		PA METHODE	SEEE	4.4-000	i
Supplementarial   Supplement		N.	_				÷	02	<u> </u>	9702049	á	02 b	┷-		â	!		Z	Chrysene	ŝ
Sample Marie   Product	-		-				â	02 b		9702049	ó	/02		970204	- 10			2	4-chloropnenyi Phenyi Ether	ŝ
Supplementary	-		-1				- <del>^</del>	25		9702049	â	/02 b		970204	÷			2	2-chiorophenoi	ŝ
Supple   Martin   M		NT	-			1	60	02 b	_	9702049	á	/02 b		970204	\$6		-	2	z-Choronaphinalene	6
Sample Authorise)		NT	_			1	â	<u> </u>		9702049	á			9/0204	â			1 2	3 chicroschibalar	2
Sample Numbers	EPA		EE EPA METHOD60	<u> </u>		<u>.                                    </u>	ABSENT	1	1		ABSEN		<u>.</u>		ABSE	-	A WE LHOUSE	7 EE E	Chickens a malk a Discour	,
Sample Numbers   Priorized		Z	-		<u> </u>	-	â		-		â				â	<u>'</u>		2 2	Chicago	6
Sample Numbers   97/03/28   97/		N.T	T				10	2		9702049	â	/02 b		970204	â			Z	4-Bromophenyi Pnenyi Ether	ŝ
Sample humbors   OFFICATION		N					10.0	02		9702049	VI 18 18 18	5		B/0204	78.0			113	Dispersional Phone Ethan	<u>بر</u>
Sample Numbers   \$Priority   \$\text{Priority   \$\text{Prio		N			1	<u>.                                      </u>	<b>^10</b>	25		9702049	<b>^10</b>	02	_i_	970204	ê			3 2	Bis(2 athytheyyt)obtholete	که اذ
Sample Numbers   \$\frac{1}{2}\f		NT	7		<u>.                                    </u>	٠.	10		<u></u>	9702049	â			9/0204	ê	-	-	1 2	Bis/2 chloroisponoullabor	3
Sample Numbers    07/03/26   07		N					â		<u>.i.</u>	9702049	6			9/0204	ê	-		1 2	Bis/2 chloro ethullethor	3 6
Sample Numbers   1702/362   170	E EPA METHOD608		EE EPA METHODEO	L	•	L	ABSENT				ABSEN				7000		7	2 0	Bis/2 chloro albomomolhono	3
Sample Numbers   97002045   9700200   97002045   9700200   97002045   9700200   9700	E EPA METHOD608		E EPA METHOD60	ļ	1		ABSENT			_	ABSEN				A0000		A METHODA	2 2 2	delta-BHC	
Sample Numbers   97020495   15551-553   97020495   1495-055   15554-560   97020497   1495-056   17551-185   15554   97020497   17501-1857   97020497		N N			1 .		ê			<u> </u>	á				ABOEL	-	A METUODEO	200	hela.BHC	
Sample Numbers   ST020564-515-5531-553    ST020490-495-505-516-554-560    ST020491-495-508-517-591-567    ST020491-495-508-517-591-567    ST020491-495-508-517-591-567    ST020491-495-508-517-591-567    ST020497-507-518-589-574    ST020598    ST020598    ST020491-495-508-517-591-567    ST020497-507-518-589-574    ST020598    ST020598    ST020498    ST		Z					6			070000	5 6		_	9702040	ŝ	-		Z	Benzo(k)fluoranthene	ŝ
Sample Aumber   9703264-565-1-553   9703269-496-506-516-564-560   97020491-496-508-517-591-567   9703269-59-516-564-560   97020491-496-508-517-591-567   97020491-595-569-574   97020495-97020491   97020495-97027-518-568-574   97020495-97027-518-568-574   97020495-97027-518-568-574   97020495-97027-518-568-574   97020495-97027-518-568-574   97020495-97027-518-568-574   97020495-97027-518-568-574   97020495-97027-518-568-574   97020495-97027-518-568-574   97020495-97027-518-568-574   97020495-97027-518-568-574   97020495-97027-518-568-574   97020495-97027-518-568-574   97020495-97027-518-568-574   97020495-97027-518-568-574   97020495-970200-518-568-574   97020495-970200-518-568-574   97020495-970200-518-568-574   97020495-970200-518-568-574   97020495-970200-518-568-574   97020495-970200-518-568-574   97020495-970200-518-568-574   97020495-970200-518-568-574   97020495-970200-518-568-574   97020495-970200-518-568-574   97020495-970200-518-568-574   97020495-970200-518-568-574   97020495-970200-518-568-574-500-518-568-574   97020495-970200-518-568-574-500-518-568-574-500-518-568-574-500-518-568-574-500-518-568-574-500-518-568-574		2				_	á	5   K		070000	3 6	3 6		9702040	à	1		Ξ,	Benzo(o.h.i)perviene	ŝ
Sample Numbers   97020460,495:551-553   97020460,495:505:515:54-560   97020460,495:505:515:54-560   97020460,495:505:51-553   97020460,495:505:51-553   97020460,495:505:51-553   97020460,495:505:51-553   97020460,495:505:51-553   97020460,495:505:51-553   97020460,495:505:51-553   97020460,495:505:51-553   97020460,495:505:51-553   97020460   97020		Z					â	7 0		20000	á	3 8		0702040	â	-	+	2	Benzo(b)fluoranthene	ŝ
Sample Numbers   97020269.516:551.553   97020491.496:505.516:554.560   97020491.496:505.517.561.567   97020491.596:54.560   97020491.496:506.517.561.567   97020491.596:54.560   97020491.596:54.560   97020491.596:54.560   97020491.596:54.560   97020491.596:54.560   97020491.496:506.517.561.567   97020491.596:54.560   97020491.496:506.517.561.567   97020491.496:506.517.561.561.561.561.561.561.561.561.561.561		Z					â	0		9/02049	â	3 8		0702048	à			Z ; 2	Benzo(a)pyrene	6
Sample Numbers   970325504:515:551-553   97020490-495:505:516:554-560   97020491-496:506:517:581-587   97020497:507:518:588-574   97020508:   97020508:   97020508:   97020508:   97020508:   97020490-495:505:516:554-560   97020491-496:506:517:581-587   97020497:507:518:588-574   97020508:   97020508:   97020598:   97020497:   9		F.					â	-!	<u> </u>	9702049	â	1 0		202048	5 6			2	Renzo/a)anihracana	<u>ئ</u>
Sample Numbers   970325504:515:551-553   97020490:495:505:516:554-560   97020491:496:506:517:581-587   97020497:507:518:588-574   97020508:   97020508:   97020508:   97020508:   97020508:   97020497:507:518:588-574   97020508:   97020508:   97020508:   97020508:   97020598:   97020497:   970	E EPA METHOD808	 	E EPA METHOD80	<u> </u>		<u>.                                    </u>	ABSENT		<u>.                                    </u>		ABORN	_ i_			2000			2 0	Renzidine	3
Sample Numbers   97030504:515:551-553   97020504:515:551-553   97020504:515:551-553   97020504:515:551-553   97020504:515:551-553   97020505:516:554-560   97020491-496:506:517:581-567   97020491-496:506:517-581-567					<u>.</u>	1	â				â				200	+	METHODES	200	Arodor 1260	1
Sample Numbers   Striction	E EPA METHOD608		E EPA METHODSO	ᆜ		<u> </u>	1		<u> </u>	4	ABSENT	1	-	T 9702049	ABSEN		A METHODEO	SEE EP	Aldrin	<u> </u>
Simple Numbers 97020504:515:551-553   97020490:495:505:516:554-560   97020491:496:506:517:581-567   97020491		Z					ŝ	0	i	97020496	â	_		9702049	ίο			Z	Acenaphthylene	ŝ
Simple Numbers 97020504:515:551-553   97020490:495:505:516:554-560   97020491:496:506:517:561-567   97020491:496:506:517:5	***************************************	N					<b>10</b>	5	<u> </u>	97020496	â	·		9702049	ŝ	<u> </u>		Z	Acenaphthene	. 6
1703/26   1703				_															EPA 625	
Sile 16  Sile 17  Sile 18  Sile 20  Sile 10  Sile 20  Sil	OE NUMBER Date	0	OE NUMBER		Date	OE NUMBER	Result	۵		NUMBEI	Result			NUMBE	L.		NUMBER	Result	Compound	(ug/L)
Tracking Numbers GN970271 GN970272 GN970272 GN970275 GN970275	7	Site	e 10	SI		ļ	Site 2				Sile 23	-	<del>-</del>	2	Site 22	1	2	Site 16		Limit
Sample Numbers 97020504:515:551-553 97020490:495:505:516:554-550 97020491:496:508:517:561-567 97020497:507:518:568-574 97020508:	970277	GNS	1970275	င္ခ		1	GN970274			ω	GN97027			72	GN9702		71	GN9/02	Tracking Numbers	ection
PARIS CUITECINE STOURCE STOURC	20581:	9702	020508:	97	574		97020497	37	17:561-50	1:496:506:5	9702049	60	516:554-5	0:495:505:	9702049		14:515:551-553	9702050	Sample Numbers	. 20
	33/28	97/0	03/28	97.			97/03/28				97/C0//B				STIONIE.				Cure Company	

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																			Z.4,6-Inchlorophenol	1.2.4. HOHOLOGISTIS	9 A Trichicobactana	Toxaphene	Pyrene	Phenoi	Tionanumonio	henanihrene	Pentachiorophenol	4-Nirophenol	2-Nitrophenol	Nilropenzene	N-Windsociphenylamine	Na Caronia i Constituiro	N Nicosodio Browley	Naphihalana	4-Methylenedianiline	sophorone	Indeno(1,2,3-c,d)pyrene	Hexachloroethane	Hexachlorocyclopentadiene	Hexachlorobuladiene	Hexachioropenzerie	riuorene	- iuototiulaila	El propincio	A-Dinitrotoliano	2.6-Dinitrotoluene	2,4-Dinitrophenol	Compound			Tracking Numbers GN970271	Sample Numbers 97020504:515:551-553	Date Collected 97/03/28			-		WHITEMAN PROJECT 17
							j				ŀ								Z	3	1	SEE EP	¥	Z	- N	-	3	Z	Z	2	2	3		2	2	Z	Z,	2	Z	N	Z	2	2	1	2	NT.	N.	Result		Site 16	GN9702	9702050	97/03/28					
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																			97/04/02	97/04/02	70/10//8	070400	97/04/02	97/04/02	97/04/02	20110110	201	97/04/02	97/04/02	97/04/02	97/04/02	87/04/02	8//04/02	20/10/1/8	070400	97/04/02	97/04/02	97/04/02	97/04/02	97/04/02	97/04/02	97/04/02	97/04/02	9//04/02	20/10/18	20100100	97/04/03	Date		!	1	6:554-560						
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	-	<u> </u>	<u> </u>	<u> </u>		$\frac{1}{1}$	+	+					t	1	t	$\dagger$	$\frac{1}{1}$	+	0	5	0,0	÷	Ť	-		H	†	÷	!	0	0	0	0	t	Ť	i	T	寸	t		ь	6	0	0	0	+	1		1			7			es	AN		RY
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# WHITEMAN PROJECT 17

# DATA SUMMARY FORM METALS Wastewater Samples (mg/L)

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Date Collected 97/03/28	97/03/28			L	97/03/28				97/03/28				97/03/28				01100120			1			
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	Site 6			. į	Site 7				Site 10	1		!	Site 11			10 1	Site 12	Site 12	Č	Site ?	Site ?		
Compound	Result	OE	Date	۵	Result	OE	Date	۵		OE NUMBER	Date	۵	Result	OE	Date	٥		OE NUMBER	Date	Ω 78		OE NUMBER	Date
Group F																_						_	1
<0.030 Aluminum	0.064	97020510	97/04/07		0.045	97020511	97/04/07	j	0.354	97020512	97/04/08		0.054	97020513	97/04/07	I	0.195	97020514	97/04/08	1.12	-	97020519 97	97/04/08
<0.003 Antimony	0.004	97020510	97/04/07	į	!	97020511	97/04/07	ļ		!	97/04/08		- 1	97020513	97/04/07				97/04/08	6	చ	:	97/04/08
<0.005 Arsenic	\$0.005	97020510	97/04/07		0.005	97020511	97/04/07	1	<0.005	97020512	97/04/08		!	97020513	97/04/07		٠,۱		97/04/08	0	i		97/04/08
<0.050 Barium	0.037	97020510	97/04/07		0.046	97020511	97/04/07		0.052	97020512	97/04/08			97020513	97/04/07				97/04/08	â			97/04/08
<0.001 Beryllium	<0.0005	97020510	97/04/07		<0.0005	97020511	97/04/07		8000.0	97020512	97/04/08		<0.0005	97020513	97/04/07		8		97/04/08	0			97/04/08
<0.05 Boron	N.T	97020510	97/04/07	!	Z	97020511	97/04/07		NT	97020512	97/04/08		Z	97020513	97/04/07		NT		97/04/08	목			97/04/08
<0.001   Cadmium	0.007	97020510	97/04/07	!	0.002	97020511	97/04/07		ô.001	97020512	97/04/08		ô.061	97020513	97/04/07		0.171 9	97020514	97/04/08	0.0	0.015 97		97/04/08
<1 Calcium	곡	97020510	97/04/07	:	N	97020511	97/04/07	i	Z	97020512	97/04/08	1	Z	97020513	97/04/07			97020514	97/04/08	곡		97020519 9	97/04/08
<0.01 Chromium	<0.005	97020510	97/04/07	i	<0.005	97020511	97/04/07		0.047	97020512	97/04/08	1	<b>^</b> 0.005	97020513	97/04/07		0.017	97020514	97/04/08	0	0.111 97	97020519 9	97/04/08
<0.05 Coball	<0.025	97020510	97/04/07	-	<0.025	97020511	97/04/07	İ	<0.025	97020512	97/04/08		<0.025	97020513	97/04/07		<0.025	97020514	97/04/08	0	0 146 97	97020519 9	97/04/08
<0.02 Copper	0.016	97020510	97/04/07		0.024	97020511	97/04/07		0.012	97020512	97/04/08		<0.010	97020513	97/04/07		0.14	97020514	97/04/08	0	0.06 97	97020519 9	97/04/08
<0.03 Iron	0.646	97020510	97/04/07		0.332	97020511	97/04/07		3.76	97020512	97/04/08		0.316	97020513	97/04/07		0.774	97020514	97/04/08	0		97020519 9	97/04/08
<0.02 Lead	0.011	97020510	97/04/07		0.003	97020511	97/04/07		0.017	97020512	97/04/08		0.001	97020513	97/04/07		0.072	97020514	97/04/08	0		97020519 9	97/04/08
<1 Magnesium	Z	97020510	97/04/07		Z	97020511	97/04/07		Ŋ	97020512	97/04/08		Z	97020513			- 1		97/04/08	Z	1		97/04/08
<0.03 Manganese	Z	97020510	97/04/07	<u> </u>	깈	97020511	97/04/07		Y,	97020512	97/04/08		N <sub>1</sub>	97020513	97/04/07		N,		97/04/08	<u> </u>			97/04/08
0 0002 Mercury	<b>\$0.0002</b>	97020510	97/04/07	:	0.0002	97020511	97/04/07		0.0003	97020512	97/04/08		<b>&lt;</b> 0.0002	97020513			202		97/04/08	0	24		97/04/08
<0.03 Molybdenum	<0.030	97020510	97/04/07	:	<0.030	97020511	97/04/07		<0.030	97020512	97/04/08		<0.030	97020513	97/04/07	İ	<b>&lt;</b> 0.030		97/04/08	<u> </u>	į		97/04/08
<0.03 Nickel	0.014	97020510	97/04/07	,	<0.010	97020511	97/04/07	<del></del>	0.039	97020512	97/04/08		<0.010	97020513	97/04/07				97/04/08	0	<u>i i</u>		97/04/08
<1 Potassium	Z	97020510	97/04/07	Ī	N	97020511	97/04/07	<u>-</u>	Z	97020512	97/04/08		Z	97020513	97/04/07	<u>.                                      </u>	Z	97020514	97/04/08	Z	9	97020519	97/04/08
1	<b>^0.005</b>	97020510		C	<b>^0.005</b>	97020511	97/04/07	٠.	<b>&lt;</b> 0.005	97020512	97/04/08	Ç.	<b>&lt;</b> 0.005	97020513	97/04/07	٠.	<0.005	97020514	97/04/08	ç. 0	0.257 97	97020519	97/04/08
<0.01 Silver	<0.005	97020510	97/04/07	İ	<0.005	97020511	97/04/07	H	<0.005	97020512	97/04/08		<0.005	97020513	97/04/07		<0.005	97020514	1 1		<0.005 97	97020519	97/04/08
	N	97020510	97/04/07	<del>:</del>	Z,	97020511	97/04/07	<del>:</del>	Z	97020512	97/04/08	-	TN	97020513	97/04/07		Z		97/04/08	z	NT 9	97020519	97/04/08
<0.14 Strontium	100000	97020510	97/04/07	-	30,000	A 0.397 97020511	97/04/07	:	20.977	97020512	97/04/08	Ī	0,000	07020513	97/04/07		0336		97/04/08	_	0.005	97020519	97/04/08
<0.001 Thallium	ô.001	97020510	97/04/07	·	<u> </u>	97020511	97/04/07	_	<b>₹</b> 0.001	97020512	97/04/08		<b>&lt;</b> 0.001		97/04/07		<b>^</b> 0.001		97/04/08	-	į		97/04/08
<0.21 Titanium	<0.025	97020510	97/04/07		<0.025	97020511	97/04/07	_	<0.025	97020512	97/04/08		<0.025	97020513	97/04/07		<0.025		97/04/08	Δ	<0.025 9		97/04/08
<0.05 Vanadium	N T	97020510	97/04/07		NT	97020511	97/04/07		Z	97020512	97/04/08		N	97020513	97/04/07	-	Z		97/04/08	Z	NT 9	97020519	97/04/08
<0.05 Zinc	0.050	97020510	97/04/07	_	0.027	97020511	97/04/07	_	0.372	97020512	97/04/08		0.35	97020513			ž	97020514	97/04/08	0	0.543 9		97/04/08
8016 MOD (AFFF)															_	1	1			1			
<0.10 mg/L 2(2-Butoxyetoxy)Ethanol	<0.1	97020485	97/04/02		0.442	97020486	97/04/02		ô.	97020487	97/04/01		ô.1	97020488	97/04/04		0.1	97020489	97/04/04	-	N T		
Selenium low recovery	21.9%	97020510	97/04/07	i	51.6%	97020486	97/04/02	+	41.2%	97020487	97/04/01	+	17.3%	97020488	97/04/04	_	47.6%	97020489	97/04/04	1			
Thallium low recovery	44.0%	97020510						-	1				-	1		-				i	-		i
				$^{+}$	-			-	1			$\dagger$	+	İ	+	$^{+}$							
				i				+	+		-	i	-		+	<u>i i</u> 				<u> </u>			
	-			•	_	_		<del>                                     </del>			-	İ		-	-								
_				<del>                                     </del>																			

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# WHITEMAN PROJECT 17

# DATA SUMMARY FORM

Wastewater Samples COMMENTS

'page 1 of 2

< - Signifies none detected and the detection limits. : SEE COMMENT

ABS : ABSENT SS

Comment Code

HOLD TIME EXCEEDED.

OTHER FUEL HYDROCARBONS ARE PRESENT.

SAMPLE SPIKE RECOVERIES ARE LOW DUE TO ALKALINE COMPOSITION OF SAMPLE FOR SELENIUM AND/OR THALLIUM.

MATRIX SPIKE WAS BELOW ACCEPTABLE LIMITS FOR CARBON TETRACHLORIDE AND TRICHLOROETHENE DUE TO MATRIX INTERFERENCE. PESTICIDES ARE ABSENT QUALITATIVELY (EPA 625)

Comments for OEHD Sample #: 97020493 HEAVY EMULSION. SAMPLE CONTAINED MODERATE AMOUNT OF JET FUEL TYPE HYDRO CARBONS (C12-C16).

Comments for OEHD Sample #: 97020494 HEAVY EMULSION. SAMPLE CONTAINED A SMALL AMOUNT OF JET-FUEL TYPE HYDROCARBONS.

Comments for OEHD Sample #: 97020500 VINYL CHLORIDE APPROXIMATELY 3.3 UG/L, 1,1,1-TRICHLOROETHANE APPROXIMATELY 1.8 UG/L, M,P,-XYLENE APPROXIMATELY 1.2 UG/L, Comments for OEHO Sample #: 97020499 TOLUENE APPROXIMATELY 1.1 UG/L, ETHYLBENZENE APPROXIMATELY 1.3 UG/L, M,P,XYLENE APPROXIMATELY 2.4 UG/L, O-XYLENE APPROXIMATELY 1.9 UG/L. O-XYLENE APPROXIMATELY 1.0 UG/L.

Comments for OEHD Sample #: 97020501 SAMPLE DILUTED DUE TO OTHER FUEL HYDROCARBONS AT APPROXIMATELY 200-300UG/L

Comments for OEHD Sample #: 97020547 (CBC) CANCELLED BY CHEMIST DUE TO FUEL LAYER OF SAMPLE WHICH WOULD BE DETRIMENTAL TO ANALYZER EQUIPMENT.

Comments for OEHD Sample #: 97020548 SMALL AMOUNTS OF JP-8.

Comments for OEHD Sample #: 97020540 MODERATE AMOUNTS OF JP-8.

Reviewed By:

Chief, Environmental Chemistry Branch VICTORIA S. DUNOVANT, L1 CoI, USAF, BSC

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## DATA SUMMARY FORM METALS Wastewater Samples (mg/L)

	Someth Francisco	Cold Collected 97/03/20				97/03/6																		
	Tracking Numbers 9/02004:515:551-553	0007078	4.515.551-	553	Ĺ	97020490	495:505:5	97020490:495:505:516:554-560	Ĺ	97020491:496:506:517:561-567	496:506:5	17:561-5	7	<u> </u>	97020497	97020497:507:518:5	97020497:507:518:568-574		507:518:568-574		:507:518:568-574	507:518:568-574 97020508:	507:518:568-574	507:518:568-574 97020508:
Limit	Sile 16	Sile 16	-			GN9/02/2				GN970273					GN97027	274	274	274	)274	)274	)274	0274 GN970275	0274 GN970275	0274 GN970275
	Compound	Regulation	OFF		-		90	•	1		30				7 8110	30	-	-	-	OE	OE Site 10	OE Sile 10	OE Site 10 Site ?	OE Sile 10
	Group F			7	_ 1			7	ŀ				4		Meann	1	Meant Nomber Date	NOMBEN.	NOMBEN, Date	NOMBER, Date 1 C Result	NOMBEN DATE OF	NOMBER Date Q Result NUMBER Date Q	NOMBER Date Q Result NUMBER Date Q Result	NOMBER Date Q Result NUMBER Date Q
<0.030	Aluminum	1.10	97020515	97/04/08		0.07	97020516	97/04/07		0 44	07020517		-		200		070000	070000	700000	700000	700000	070000000000000000000000000000000000000	070000000000000000000000000000000000000	070000000000000000000000000000000000000
	Antimony	<b>^0.003</b>	97020515	97/04/08		0.005	97020516			3	97020517				2020		81602078	81602078	81602078	97020518 97704708	97020518 97704708	97020510 97704708 NT	97020510 97704708 NT	97020510 97704708 NT
<b>6</b> .005	Arsenic	ô.005	97020515	97/04/08		<b>^</b> 0.005	97020516		İ	_	97020517		1		000	<u>"</u>	97020546	97020546	97020548 97704708	97020548 97704708	97020548 97704708	1000000 B 0000000 NT	1000000 B 0000000 NT	1000000 B 0000000 NT
<b>^0.050</b>	Barium	0.063	97020515	97/04/08		0.048	97020516		Ì	1	07000647				2000	Ĺ	9102070	91007018	9/020318 8//04/08	9/020318 8//04/08	9/020318 8//04/08	NI SUMPLE STORY	NI SUMPLE STORY	NI SUMPLE STORY
	Beryllium	¢0.0005	97020515 97/04/08	97/04/08		ô.0005	97020516		Ī	60005	97020517	970409			0.000	•	81000518	81020218	8/0202018	8/0202018	8/0202018	97020518 970408 NT	97020518 970408 NT	97020518 970408 NT
ô.05	Boron	N,				N.				N			+		1000	Š	2000/04/05/05	Š	2000/04/05/05	87020318 97704708	87020318 97704708	87020318 97704708	87020318 97704708 N	87020318 97704708 N
<b>6</b> 0.001	Cadmium	0.001	97020515	97/04/08		0.005	97020516	97/04/07		^0 C	97020517	07/04/08	1		2 3		070000	070000	270000000000000000000000000000000000000	270000000000000000000000000000000000000	270000000000000000000000000000000000000	N	N	N
^	Calcium	깈				N			İ	S C	01.00	1	10	1	N 0.000	_	9107070	_	9107070	8/04/04	8/04/04	N SUPPLIE	9/02/03 8//04/08 NI	9/02/03 8//04/08 NI
6.01	Chromium	0.010	97020515	97/04/08		0.011	97020516	97/04/07		<b>\$0.005</b>	97020517		-		0031		07020548	07020548	07020518 070450	07020518 070450	07020518 070450	07070518 070400 N	07070518 070400 N	07070518 070400 N
<0.05	Cobalt	<0.025	97020515			<0.025	97020516			0.005	07020517		0		0.031	_	9/020518	9/020518	97020518 97/04/08	97020518 97/04/08	97020518 97/04/08	9/02/03/18 9/704/08 NT	9/02/03/18 9/704/08 NT	9/02/03/18 9/704/08 NT
<0.02	Copper	0.057	97020515	97/04/08		0.01	97020516			10.023	07020547		910		20.025	ľ	81507076	81507076	97020518 97/04/08	97020518 97/04/08	97020518 97/04/08	9/02/0518 9//04/08 NT	9/02/0518 9//04/08 NT	9/02/0518 9//04/08 NT
	iron	2.06	97020515	97/04/08	Í	9	97020516			0.010	07020217		9 0		0.013	L	81502078	81502078	97020518 97/04/08	97020518 97/04/08	97020518 97/04/08	9/020518 9//04/08 NT	9/020518 9//04/08 NT	9/020518 9//04/08 NT
<b>\$0.02</b>	Lead	0.006	9702051	97020515 97/04/08		0.006	97020516	97/04/07	1	0.000	97020517		P		2.02		ALCOZO2A	ALCOZO2A	ALCOZO2A	07020548 97/04/08	07020548 97/04/08	07020540 070408 NT	87020549 97704708 NT	87020549 97704708 NT
<u>:</u>	Magnesium	Z				NT				3	0,000	0,707,00	1	1	N 0.00		0100000		SOUPOUJE DICOZOJE	SOUPOUJE DICOZOJE	SOUPOUJE DICOZOJE	IN SOLDON	IN SOLDON	IN SOLDON
<u> </u>	Manganese	N,				Z,			İ	목		1	-		3	2	2		NT			NT NT	N	N
	Mercury	<0.0002	9702051	97020515 97/04/08		<b>&lt;</b> 0.0002	97020516			<0.0002	97020517	97/04/08	8	Ιį	<0.0002	002	002 97020518	0002 97020518 97/04/08	0002 97020518 97/04/08	0002 97020518 97/04/08	0002 97020518 97/04/08	0002 97020518 97/04/08 NT	0002 97020518 97/04/08 NT	0002 97020518 97/04/08 NT
6003	Nickel	20 040	0700061	97020516 070408	Ī	<b>*0.030</b>	9/020516			<0.030	97020517		180	ł	<b>&lt;</b> 0.030	<u> </u>	97020518	97020518	97020518	97020518 97/04/08	97020518 97/04/08	97020518 9704/08 NT	97020518 9704/08 NT	97020518 9704/08 NT
_	Polassium	Z,				21	01020310	10/10/10	Ì	1000	/15070/B	8/704/08	œ	1	0.034		97020518		97020518 97/04/08	97020518 97/04/08	97020518 97/04/08	97020518 97/04/08	97020518 97/04/08 NT	97020518 97/04/08 NT
<b>^0.005</b>	Selenium	ô 005	9702051	97020515 97/04/08	∍.	¢0.005	97020516	97/04/07	•	6005	97020517	97/04/	3		385	上	07000640	07000540	07000540	07000540	07000540	270000000000000000000000000000000000000	270000000000000000000000000000000000000	270000000000000000000000000000000000000
ô01	Silver	<b>^</b> 0.005	9702051	97020515 97/04/08		<b>6</b> 005	97020516	97/04/07	1		97020517	97/04/08		.1.	200		07020540	07020540	97020519 97704700 m,	97020519 97704700 m,	97020519 97704700 m,	97020510 970400 m, N1	97020510 970400 m, N1	97020510 970400 m, N1
i	Sodium	Z		i .		Y.				- į			<u> </u>		N .000	ļ	01020200	ļ	01020200	000000000000000000000000000000000000000	000000000000000000000000000000000000000	IN DOUBLIS OF CONTROL	Prozection of the post of the process of the post of t	Prozection of the post of the process of the post of t
¢0.14	Strontium	0.478		97020515 97/04/08		ANNE		97020516 97/04/07		6 200	M07020517 97/04/08	7 97/04/	60	- 1	- Autor	_	_	100 PM 197020518 970408	V97020518 970408	V97020518 970408	V97020518 970408	797020518 Q7MAM9 NIT	797020518 Q7MAM9 NIT	797020518 Q7MAM9 NIT
=	Thallium	¢0.001	97020515	97/04/08		6.001	97020516	97/04/07		0.001		97/04/08	æ ;	í	ô.001		97020518		97020518 97/04/08	97020518 97/04/08	97020518 97/04/08	97020518 970408 NT	97020518 970408 NT	97020518 970408 NT
,	IIIanium	<0.025	97020515	97/04/08	İ	<0.025	9702051	97020516 97/04/07		<0.025	9702051	97020517 97/04/08	<u>.</u> ه	į	<0.025	- 1	97020518	97020518	97020518 97/04/08	97020518 97/04/08	97020518 97/04/08	97020518 97/04/08 NT	97020518 97/04/08 NT	97020518 97/04/08 NT
<b>*0.05</b>	Vanadium	Z				N				NI			-		i								NT	NT
6.00	B015 MOD/AFFF)	0.032	8/020515	97/04/08	T	0.054	97020516	97/04/07	T	0.018	97020517	97/04/08			0.173		97020518		97020518 97/04/08	97020518 97/04/08	97020518 97/04/08	97020518 97/04/08 NT	97020518 97/04/08 NT	97020518 97/04/08 NT
<0.10 mg/	2(2-Butoxyetoxy)Ethanol	Z					9702049	97020490 970404		à	0700040	2		_		-								
											0,000	01101101	+   -	, ,	AAlfo	-	28402018	-	28402018	POLINA ZAPOZOJE	POLINA ZAPOZOJE	POLINA ZAPOZOJE	IN POPOJE ZAPOZOJE	IN POPOJE ZAPOZOJE
Selection	Ifow recovery	70																						
Thallium	Thallium (low recovery)	79.070	CICOZOVE	97/04/08		24%	9702049	97020490 97/04/04	1	36.4%	97020491	1 97/04/04	<del> </del>	1	20.3%	<del></del>	97020492	<del></del>	97020492	97020492	97020492	97020492	97020492	97020492
nalitur	Inalium (low recovery)							+	-															
		:										$\dagger$	+						,			<u>i</u>	<u>i</u>	<u>i</u>
:				-				_	-						-			1						
					-							1	-	į	1									

#### DATA SUMMARY FORM COMMENTS

Wastewater Samples

page 1 of 2

SN : SEE COMMENT < - Signifies none detected and the detection limits.

ABS : Absent

HOLD TIME EXCEEDED.

Comment Code

HEAVY EMULSION. SAMPLE CONTAINED A LARGE AMOUNT OF JET-FUEL-TYPE HYDROCARBONS.

PESTICIDES QUALITATIVELY ABSENT (EPA 625).

OTHER FUEL HYDROCARBONS ARE PRESENT.

Comments for OEHD Sample #: 97020505 VINYL CHLORIDE APPROXIMATELY 1.6 UGL, 1,1,1-TRICHLOROETHANE APPROXIMATELY 1.0 UGA, MATRIX SPIKE WAS BELOW ACCEPTABLE LIMITS FOR CARBON TETRACHLORIDE ANDTRICHLOROETHENE DUE TO MATRIX INTERFERENCE.

M.P.-XYLENE APPROXIMATELY 0.9 UGA., O-XYLENE APPROXIMATELY 1.1 UGA.

Comments for OEHD Sample #: 97020506 VINYL CHLORIDE APPROXIMATELY 2.2 UGA.

Comments for OEHD Sample #: 97020562 SMALL AMOUNTS OF JP-8. Comments for OEHD Sample #: 97020552 LARGE AMOUNTS OF JP-8.

Comments for OEHD Sample #: 97020508 SAMPLE DILUTED DUE TO PRESENCE OF OTHER FUEL HYDROCARBONS AT APPROXIMATELY 200-300 UGAL

Commanis for OEHD Sample #: 97020507 M.P.,XYLENE APPROXIMATELY 1.3 UGA., O-XYLENE APPROXIMATELY 1.3 UGA.

Comments for OEHD Sample #: 97020581 RESULTS ARE IN mg/Bottle (ERA QC)

2 3 SAMPLE SPIKE RECOVERIES ARE LOW DUE TO ALKALINE COMPOSITION OF SAMPLE FOR SELENIUM AND/OR THALLIUM

Comments for OEHD Sample #: 97020555 TRACE AMOUNTS OF JP-8.

Reviewed By:

Chief, Environmental Chemistry Branch VICTORIA S. DUNOVANT, Lt Col, USAI

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# DATA SUMMARY FORM METALS Wastewater Samples (mg/L)

	Date Collected 97/03/23	97/03/23			9	97/03/23			97/03/23	3			07/03/22	100			-							L
Method	Sample Numbers 97019177; 196; 261; 335-341;	97019177	7 196 261	335-341	9	7019178	97019178: 197: 342-347:	47:	97019	97019179-348-			07010	07010108- 250 254	36.	-								!
Detection	Tracking Numbers GP970220	GP97022	0	. :	0	GP970221			GP970222	0222			GP97	0223			-				-			!
Limit		H20 P01	H2O POTABLE QC		170	RESERV.	PRESERVATIVE QC		PITC	PITCHER BLK			Isco	EQUIF	돗				!		- <del>:</del>			
(mg/L)	Compound	Result	NUMBER	Date	۵	Result	NUMBER	Date	O Result	OE NUMBER		Date O	R	- 		•		<del>i</del>	<del></del> ;			õ		
	Group F	,							_1	-1	7	- -			7	4	- Keant	Monday	1-	Care	Kesuk	NOMBEX	Date	ء
<0.030	Aluminum	<0.015	97019196	97/04/03	Â	<0.015 9	97019197	97/04/02	Z,	-	-	1	ô.01	5 97019198	198 97/	97/04/04	1		1	1	1			
<b>&lt;</b> 0.003	Antimony	<b>6</b> 0.003	97019196	97/04/03	0	0.004 9		97/04/02	N.	-	_		^0.003	ω <sub> </sub>	198 97/	97/04/04	+	_	1	1				
<0.005	Arsenic	<b>^</b> 0.005	97019196		•	<0.005 9	- 1	97/04/02	N			1	<b>^</b> 0.005		97019198 97/04/04	04/04	-		1					1
<0.050	Barium	0.033	97019196					97/04/02	N.				<0.025		9198 97/	97/04/04	1	1						
<0.001	Beryllium	<0.0005	97019196	97/04/03		<0.0005 9	,	97/04/02	N.			_	<b>&lt;</b> 0.0005			04/04		1	-	-				
<0.05	Boron	N			-		- 1		Z,		_		Z				+			-				
<b>6</b> 0.001	Cadmium	<0.00 <b>1</b>	97019196	97/04/03		<0.001	97019197	97/04/02	N				6.001	)1 97019198		97/04/04	1	1	<u> </u>	-				
۵	Calcium	Z							N.			_	Z	- :			1	-	-	+				
<0.01	Chromium	<0.005	97019196	97/04/03		<0.005	97019197	97/04/02	NT				ô.005	)5 97019198	9198 97/	97/04/04	1	+		1				
<0.05	Coball	<0.025	97019196	97/04/03		<0.025 €	97019197	97/04/02	Z				<0.025		9198 97/	97/04/04	1	1	1	<u> </u>				
<0.02	Copper	0.015	97019196	97/04/03		-	97019197	97/04/02	N N				<0.010	- 1		97/04/04			1	1				-
6.03	Iron	0.045	97019196	97/04/03		<u></u>		97/04/02	NT			<u> </u>	0.073			97/04/04								j
<u> </u>	Magnesium	Z C	0.0.0	0,000	j	N C	2010101	70/10/1/6	2 2		-	1	- A	97019198		97/04/04	<u> </u> 		!					
<0.03	Manganese	3			Ì	NT.			N.	+	1		2 2	+	1		-		1					
<0.0002	Mercury	<0.0002	97019196	97019196 97/04/03		<0.0002	97019197	97/04/02	N T			-	ا ۵	<0.0002 97019198		97/04/04	+		-	-				
<0.03	Molybdenum	<0.030	97019196	97/04/03		<0.030	97019197	97/04/02	NT				<0.030	30 97019198		97/04/04	-	_		-	-			-
<0.03	Nickel	<0.010	97019196	97019196 97/04/03	Ĺ	<0.010	97019197	97/04/02	Z,				<0.010	i		97/04/04	1	1	-					-
2	Polassium	3			_!				N.				Z.						1	-				İ
3 8	Charle	6.60	961610/6	97019196 97/04/03				97/04/02	N	-			6.00	05 97019198	I	97/04/04								_
4	Sodium	1 000	97019190	SOLEOUS	İ	0.00	JELELOZE	97/04/02	2	-			ô.00	5	97019198 97	97/04/04								
6014	Strootium	263	0701010	07/04/02		3	200	2		<u> </u>	<u> </u>		Z	<u> </u>				<u> </u>						
ô.001	Thallium	ô.00	97019196	97/04/03	?	6 6	97019197	97/04/02	2 2	1	1		0.005	i	97019198 97/04/04	/04/04					<u> </u> 	1		
<0.21	Titanium	<0.025	97019196				97019197	97/04/02	Z.	1	1	-	2000		07010100 07/04/04	2 2	1	-		<u> </u>	$\frac{1}{1}$			
<0.05	Vanadium	NT				N N			Z		+	-	Z	<del>-</del>	9,010	101010	1	+	1	_				
<0.05	Zinc	0.006	97019196	97019196 97/04/03		0.002	97019197	97/04/02	Z				0.011		97019198 97	97/04/04	1	+	+	_	-			1
	8016 MOD (AFFF)																+	+						
<0.10 mg/L	L 2(2-Butoxyetoxy)Ethanol	N				Z			NSR	R 97020673	0673		- 2				1			+				
										+	+		+											
•	Selenium (low recoveries)	78.6%	_	97019196 97/04/03							1	-	+	1	4				+	-				
:	Thallium (low recovery)	74.1%		97019196 97/04/03											1		-		1	1				
				+	İ				1															
:				+	1					1		<u> </u>	$\frac{\perp}{\parallel}$				<u> </u> 		<u> </u>					
		+					-			-	+		+	1	+		+							
										1	-		+	+			+		-	-				
-														-				<u> </u> 	1					1
									-	-	-	-	-	L	F		-	-	$\mid$	L				L

DATA SUMMARY FORM Wastewater Samples COMMENTS

page 1 of 1

< - Signifies none detected and the detection limits.

SN : SEE COMMENT. ABS : Absent

#### Comment Code

HOLD TIME EXCEEDED.

RECOVERY OF BROMOFORM WAS BELOW ACCEPTABLE LIMITS IN THE LABORATORY FORTIFIED BLANK.

SAMPLE SPIKE RECOVERIES ARE LOW DUE TO ORGANIC OR ALKALINE COMPOSITION SELENIUM AND/OR THALLIUM.

All pesticides (EPA METHOD 625) were absent qualitatively.

Comments for OEHD Sample #: 97019177 POSITIVELY IDENTIFIED BROMODICHLOROMETHANE AT APPROXIMATELY 0.8 UG/L AND DIBROMOCHLOROMETHANE AT 3.3 UG/L AND BROMOFORM AT 8.5 UG/L.

Comments for OEHD Sample #: 97020673 CANCELED-NSR : NO SAMPLE RECEIVED

Reviewed By:

Chief, Environmental Chemistry Branch JICTORIA S. DUNOVANT, LI CoI, USAF, BSC

Table   Family   Fa
Compound   Result   Chromium
Compound   Result   Or NUMBER   Date   Or NUMBER   Or
Compound   Result   CF NUMBER   Dub   O Result   OE NUMBER   Dub   O Result   OE NUMBER   Dub   O Result   OE NUMBER   Dub   O Result   OE NUMBER   Dub   O Result   OE NUMBER   Dub   O Result   OE NUMBER   Dub   O Result   OE NUMBER   Dub   O Result   OE NUMBER   Dub   OE NUMBER
Compound   Result   OF NUMBER   Date   O Result   OF NUMBER   Date   O Result   OF NUMBER   Date   O Result   OF NUMBER   Date   O Result   OF NUMBER   Date   O Result   OF NUMBER   Date   O Result   OF NUMBER   Date   O Result   OF NUMBER   Date   O Result   OF NUMBER   Date   O Result   OF NUMBER   Date   O Result   OF NUMBER   Date   O Result   OF NUMBER   Date   O Result   OF NUMBER   Date   O Result   OF NUMBER   Date   O Result   OF NUMBER   Date   O Result   OF NUMBER   Date   O Result   OF NUMBER   Date   O Result   OF NUMBER   Date   O Result   OF NUMBER   Date   O Result   O Result   O Result   O Result   OF NUMBER   Date   O Result   O Res
All All All All All All All All All Al
Ahuminum   40.030 97017742 971
Antimony   40,003 9701742 971
Serium   Cocoo   9701742 977   Serium   Cocoo   9701742 977   Serium   Cocoo   9701742 977   Serium   Cocoo   9701742 977   Serium   Cocoo   9701742 977   Serium   Cocoo   9701742 977   Serium   Cocoo   9701742 977   Serium   Cocoo   9701742 977   Serium   Cocoo   9701742 977   Serium   Cocoo   9701742 977   Serium   Cocoo   9701742 977   Serium   Cocoo   9701742 977   Serium   Cocoo   9701742 977   Serium   Cocoo   9701742 977   Serium   Cocoo   9701742 977   Serium   Cocoo   9701742 977   Serium   Cocoo   9701742 977   Serium   Cocoo   9701742 977   Serium   Cocoo   9701742 977   Serium   Cocoo   97017742 977   Serium   Cocoo
Benyllium   C0001 9701742 971
Cadmium
Cachmium   Cachmium   Cachmium   Cachmium   Cachmium   NT   Catchm   NT   Catchm   NT   Catchm   Catchm   NT   Catchm   Catchm   NT   Catchm   Catchm   Cachmium
Calchum   NT   Calchum   1   Chriomium   Co010   9701742   971   60.050   9701742   971   60.050   9701742   971   60.050   9701742   971   60.050   9701742   971   60.050   9701742   971   60.050   9701742   971   60.050   9701742   971   60.050   9701742   971
Cobalt
Cobalt   C
Copper   C
100   100
Lead
Magnesium
Manganese   <0.030   970,1742   970, 174
Marcury
Molybdanum
Nickel   CO20   9701742   9701742   9701742   9701742   97017742
Potassium   NT
Salentium
Soliver
Sodium   NT
Strontium
Thailium
1 Itanium
2(2-Buloxyetoxy)Ethanol <0.1 97017744
2(2-Butoxyetoxy)Ethanol <0.1 97017744
2(2-Butoxyetoxy)Ethanol <0.1 97017744

#### DATA SUMMARY FORM COMMENTS

Wastewater Samples page 1 of 1

<- Signifies none detected and the detection limits.</p>
SN : SEE COMMENT.

ABS : Absent

Comment Code 

HOLD TIME EXCEEDED.

ABSENT = QUALITATIVE ANALYSIS ONLY

NO DUPLICATE WAS PROVIDED, THEREFORE, SAMPLE WAS ANALYZED WITHOUT MATRIX SPIKE.

SOME COMPOUNDS WERE REPORTED AS "SEE COMMENT" BECAUSE THE QC WAS BELOW ACCEPTABLE LIMITS. THE RESULTS OF THE ANALYSIS, FOR THESE COMPOUNDS, WERE <10 UG/L.

Reviewed By:

VICTORIA S. DUNOVANT, LI Col, USAF, BSC

Chief, Environmental Chemistry Branch



# ARMSTRONG LABORATORY

Occupational & Environmental Health Directorate/OEA 2402 E. Drive, Bldg 140
Brooks AFB, Texas 78235-5114
(210) 536-3626, FAX (210) 536-9043

WHITEMAN PROJECT 17 DATA SUMMARY FORM

Wastewater Samples INORGANIC

Date Collected   97/03/26   97/	97/03/26   97/03/26
97/03/26   97/03/26	97/03/26   97/03/26
97/03/26   97/03/26	97/03/26   97/03/26
97/03/26   97/03/26	97/03/25   97/03/25
	97/03/26   97/03/26
97/03/26   97/03/26	97/03/26   97/03/26
97/03/28   97/03/28   97/03/28   97/03/28   97/03/28   97/03/28   97/03/28   97/03/28   97/03/28   97/03/28   97/03/28   97/02/081; 82; 83; 176-181   97/02/59   97/02/45 & GN9702/45 &	97/03/26   97/03/26   97/03/26   97/03/26   97/03/26   97/03/26   97/03/26   97/03/26   97/03/26   97/03/26   97/03/26   97/02/081; 62; 63; 176-181   97/02/082   97/02/082; 60; 69; 76; 107-113; 97/02/053; 61; 70, 77; 114-120
6 97/03/26 9	6 97/03/26 9
97/03/26 97/03/26 97/03/26 97/03/26 97/03/26 97/03/26 97/03/26 97/03/26 97/03/26 97/03/26 97/03/26 97/03/26 97/03/26 97/03/26 97/03/26 97/03/26 97/03/26 97/03/26 OR Result NUMBER Date Q Result NUMBER Date Q Result 97/03/01 97/03	97/03/26 97/
97/03/26   97/03/26   97/03/26   97/03/26   97/03/26   97/03/26   97/03/26   97/03/26   97/03/26   97/03/26   97/03/26   97/02/45   GN970245   CN970245   GN970245   CN970245   GN970245	97/03/26 97/
17103/26   97103/26   97103/26   97103/26   97103/26   97103/26   97020182   97103/26   97020152, 60; 69; 76; 107-113; 97020053, 0259   0259	1703/26   97/03/26   97/03/26   97/03/26   97/03/26   97/03/26   97/03/26   97/03/26   97/03/26   97/03/26   97/03/245   97/
97/03/26 97/03/26 97/03/26 97/03/25 07/03/25 08/03/24 08/03/24 08/03/24 08/03/24 09/03/	97/03/26 97/03/26 97/03/26 97/03/26 97/03/26 97/03/26 97/03/245 97/02/052, 60: 69; 76: 107-113; 97/02/053, 61; 70; 77; 114-120 CN97/02/46 & GN97/02/46 CN9
97/03/26 97/03/26 97/0052; 60; 69; 76; 107-113; 970/20053; CN970246 CN970245 & GN970245 CN970246 OE OE Date Q Result	97/03/26 97/03/26 97/03/26 97/03/26 97/03/26 Q Result NUMBER Date Q Result NUMBER Date 97/02/01/14 97/02/01/27 97/
6 97/03/26 2; 60; 69; 76; 107-113; 97020053; 245 & GN970245 CN970246 0E CN970246 Q Result	6 97/03/26 2; 60; 69; 76; 107-113; 97/02/053; 61; 70; 77; 114-120 245 & GN97/0245 CN97/0246 & CN97/0246  OE OE NUMBER Date Q Result NUMBER Date 97/02/0107 97/04/01 13 97/02/0114 97/04/01
97/03/26 97020053; 0.N970246 CN970246 11900000000000000000000000000000000000	97/03/26 97/02/05/3; 61; 70; 77; 114-120 CN97/02/46 & GN97/02/46 CN97/02/46 & GN97/02/46 OE OE Date  13 97/02/01/14 97/04/01
97/03/26 97020053; CN970246 CN970246 THEOGRAPH O Result	97/03/26 97/02/053; 61; 70; 77; 114-120 CN97/02/46 & GN97/02/46 (CN97/02/46 & GN97/02/46)
246 53: 6	6 53: 61; 70; 77; 114-120 246 & GN970246 NUMBER Date
3: 61; 70, 77; io & GN97022 OE NUMBER	Date
	Date

<0.005 Cyanide, Total

Z

0.50

97020178 97/04/01

Z

<0.005 97020110 97/04/01

<0.005

97020117 97/04/01

71

ê

Group D

3331		3	97/03/31	97020112 97/03/31	46	T	97020180 97/03/31	221	NT	97/03/31	97020106	60	Voiatile Suspended Solids	
03/31		3			NT.	NT		NT	NT			Z	Lucidily	Sirus
	97020119 97/03/31	a 0.18	97/03/31	97020112	3.4	N	97020180 97/03/31 a	6.1	2	at to so t	90,020,00	į	od accent	<u>ا</u>
۲ 107	97020120 97/04/07	e <0.1	97/04/07	97020113 97/04/07	3.8	<del>!</del>	97020181 97/04/07 B	4.2		+		460	Surfactorie	- i
33/31	97020119 97/03/31	78.2	97/03/31	97020112 97/03/31	86.8	NT	9/020180 97/03/31	1.5	N-1	700701	0.00000	N P	Sulfides	i
03/31	97020119 97/03/3	719	97/03/31	97020112 97/03/31	892	TN	97020180 97/03/31	135	2	07/03/31	97020106	202 8	Suffales	4
		N			T	TN		Z	2	07.000	0700000	3 4	Specific Conductance	- 1
		Z,			TN	NT				!	-		Cilica Column	-
03/31	97020119 97/03/3	77	97/03/31	97020112 97/03/31	63	2	201020100					N	Residue Volatile	:
00/01	21020118	1	01700101	9		21	97020180 97/03/31	390	Ž,	97/03/31	97020106	94	Residue, Nonfilterable	
3	07020110	_ !_	07/03/31	97020112 97/02/24	508	NT	97020180 97/03/31	174	NT	97/03/31	97020106 9	2334	Residue, Filterable	^
13/31	97020119 97/03/3	a 03	97/03/31	97020112	0.8	NT	97020180 97/03/31 a	<0.2	8 NT	-		1.6	SOL MUL Residue, Sellieable	10 Z (II) Z
		Z T			NT	Z		N	2			, ,	200	
		Z			N	N N						Z	Residue Total	1
		2				N 1		NT	NT			Z	Langlier Index	
100		1			TIM	NT		27	2			N.T	Color	Silu
331	97020119 97/03/31	89.6	97/03/31	97020112	84.8	NT	97020180 97/03/31	88.1	NT	97/03/31	9/020106	35.1	Critoride	İ
		Z,			N	L'A		Z	N				tioning the state of the state	į
		NT			LN	2						T	Bromide	
		2			141			NT	TN			2	Alkalinity, Total	
-						T		NT	TN			¥	Acidity, Total	!
1				1						!			Group G	
10/01	97020118 97/04/01	ŝ	97/04/01	97020111 97/04/01	12	NT.	97020179 97/04/03	110	N	_		NI	Phenois	<10 ug/L Phenois
ļ											7		Group E	

# DATA SUMMARY FORM VOLATILE ORGANICS Wastewater Samples (ug/L)

_	Date Collected by 103126	ממנחודה										1												
Method	Sample Numbers 97020051; 59; 68; 75; 103-106;	97020051	59, 68: 75:	103-106:		97020064	97020064: 80: 135.137:	7-		97020091	93. 93. 47	6		97/03/26				97/03/26			9	97/03/26		
Detection	Tracking Numbers CN970244 & GN970244	CN970244	& GN9702	*		N970252	CN970252 & GN970252	52		N970257	CN970257 & GN970257	257		20707	28102076			9720052	9720052; 60; 69; 76; 107-113;	107-113	9	020053, 6	97020053; 61; 70; 77; 114-120	4-120
Limit		SITE 15				SITE 16		:	-	SITE 18			1	SITE 19		!	1	NE MAN	CHZO JENIO IO CHZO JENIO	1		N9/0246 &	CN9/0246 & GN970246	1
(ug/L)	Compound	Reside	NIIMBER 30	0	>		OE	,			OE				OE.	-	+		OE .			EFF WWIP	OE	_
	EPA 624 OR 601/602	-			_		TACING TA	Date	٩	Mesur	NOMBER	Date	۵	Result	NUMBER	Date	٥	Result	NUMBER	( Date	Q R	Result N	Æ	Date Q
<5.0 B	Benzene	ŝ	97020075	97/04/01	=	\$	97020080	97/03/31		ŝ	97000093	97/03/29	<del></del>	2			$^{+}$				ļ			
<5.0 B	Bromodichloromethane	<u>ۍ</u>	97020075	97/04/01	<del>-</del>		!	97/03/31	Ī		07020092	07/02/20	+		+		$^{+}$	6	9/02070		Α.	L	97020077 97	97/03/31
<5.0 B	Bromoform	<b>5</b>	97020075	97/04/01		!	97020080	97/03/31	İ	À   6	0700000	9/10/2/20	<u>,</u>	2			+	ŝ	97020076	97/03/31	Δ		97020077 97	97/03/31
_	Bromomethane	<u>6</u>	97020075	97/04/01	!	j	97020080	07/03/34	T	1	200000	97/03/20	.0	2			<del> </del>	6	97020076	97/03/31	-5		97020077 97	97/03/31
	Carbon Tetrachloride	<b>5</b>	97020075	97/04/01		1		07/03/34	I	1	200000	97/03/28	<del>-</del>	2			$\frac{1}{1}$	6	97020076	97/03/31	ŝ		97020077 97	97/03/31
	Chlorobenzene	6	97020075	97/04/01	Ĺ			07/03/34	I	$\downarrow$	9702000	97/03/28	÷	2	İ		$\perp$	ŝ	97020076	97/03/31	Ś		97020077 97	97/03/31
\$ O	Chloroethane	ŝ	97020075	97/04/01	- !	5	1	97/03/31	$\perp$	-	20002018	07/03/20	.0	2	1	-	+	ŝ	97020076	97/03/31	Δ		97020077 97	97/03/31
<5.0 2	2-Chloroethylvinylether	<u>ۍ</u>	97020075	97/04/01	!		97020080	15/60/76		3 6	97020093			2		-	+	Ĝ	97020076	1	ŝ	_	97020077 97	97/03/31
<5.0 C	Chloroform	ŝ	97020075	97/04/01	1		97020080	97/03/31			97020083	97/03/28	7 5	2 2		-	$^{+}$	ô	97020076	<u>!</u>	Ś		97020077 97	97/03/31
\$5.0 C	Chloromethane	ŝ	97020075	97/04/01			97020080	97/03/31		Ğ.	97020083	97/03/28	J .	3			+	6	9/002076		ŝ	<u> </u>	1	97/03/31
<u> </u>	Dibromochloromethane	\$	97020075	97/04/01	3	5	97020080	97/03/31			97020083	97/03/28	Б.	Y :		1	1	3 6	97000076	_i_	5 6	-	_	97/03/31
L	1,2-Dichlorobenzene	ŝ	97020075	97/04/01	=		97020080	97/03/31			97020083	97/03/28	<u>.</u>	2				6 6	97020076	97/03/34	h 6			97/03/31
	1,3-Dichlorobenzene	Ĝ	97020075	97/04/01	3	6	97020080	97/03/31		ŝ	97020083	97/03/28	ō	TN			+	ŝ	97020076		3   6		97020077	15/50/18
30	1.4-Dichloropenzene	h G	9/020075	97/04/01	<u> </u>	İ	i	97/03/31		6	97020083	97/03/28	ō	Z				Ĝ	97020076		Δ.		97020077 97	97/03/31
_	.2-Dichloroethane	Ġ.	97020075	97/04/01	<b>-</b>   -	5 6	07020000	97/03/31		1	97020083	97/03/28	+-	IN			<u>                                       </u>	ŝ	97020076		6	_		97/03/31
اب	1,1-Dichloroethene	S	97020075	97/04/01			97020080	97/03/31		2.4	07020000	97/03/28	. 2	2			+	6	97020076		<u> </u>			97/03/31
<b>&lt;5.0</b>	trans-1,2-Dichloroelhene	ŝ	97020075	97/04/01			97020080	97/03/31		_	97020083	97/03/28	7 5	4 3	-	+	+	6	97020076			L		97/03/31
<5.0	1,2-Dichloropropane	ŝ	97020075	97/04/01	ਤ	ŝ	97020080	97/03/31	į		97020083		0	Z		-	+	3 6	2700000	<u> </u>		-		97/03/31
<u> </u>	cis-1,3-Dichloropropene	Ġ	97020075	97/04/01	5	<u>\$</u>	97020080	97/03/31		Ġ	97020083		┏ .	3	-			6 6	97020076	<u> </u>	1			97/03/31
<u> </u>	Irans-1,3-Dichloropropene	ŝ	97020075	97/04/01	5	5	97020080	97/03/31		ŝ	97020083		<u>,</u>	Z		- !		6	97020076	97/03/31	h 6	1		9//03/31
i	Ethylbenzene	S	97020075	97/04/01	5	<u> </u>	97020080	97/03/31		Ĝ	97020083		<u>,</u>	N			+	Ĝ	97020076	_!	4			15/50/18
1	Memylene Choride	S	9/020075	97/04/01		İ	97020080	97/03/31	!	5.2	97020083	97/03/28	<u>.</u>	N			-	Ĝ	97020076	<u>. i</u>	\$		97020077 97	97/07/21
50	Tetrachtornethane	. 6	97020075	9//04/01				97/03/31	İ	6	97020083	97/03/28	ā	N			,	ŝ	97020076		ŝ			97/03/31
	Toluene	3 6	97020075	97/04/01	-		:	97/03/31	I	10.5	97020083	97/03/28	0	N		-		ŝ	97020076		ŝ	_		97/03/31
	1.1.1-Trichloroethane	3 6	97020075	97/04/01		1	0202020	9//03/31	İ	9.7	97020083	97/03/28	<del></del>	H			<u> </u> -	S	97020076	97/03/31	<u>^</u>			97/03/31
j	1,1,2-Trichloroethane	<u>6 :</u>	97020075	97/04/01	<b>-</b>	Ĺ	97020080	07/03/34		2 6	5,020000		+-	Z			$\vdash$	Ĝ	97020076	97/03/31	Ś			97/03/31
	Trichloroethene	9.5	97020075	97/04/01		5 6	i	07/03/31		7.4	2000000			2		-	-	6	97020076	97/03/31	Α.			97/03/31
- !	Trichloroflouromethane	Ĝ	97020075	97/04/01			97020080	97/03/31	Ì	À :	07020003			Z			+	3	97020076	97/03/31	6		97020077 97	97/03/31
\$5.0 n	m-Xylene & p-Xylene	ŝ	97020075	97/04/01	_		. !	97/03/34		67	07020003	97/03/20	+	3			-	6	97020076	97/03/31	<u> </u>		97020077 97.	97/03/31
<5.0 a	o-Xylene	ŝ	97020075	97/04/01	_ !		97020080	97/03/31		1	97020095		┿	2		-	1	Ĝ	97020076	97/03/31	ŝ	_	97020077 97,	97/03/31
	Vinyl Chloride	ŝ	97020075	97/04/01			97020080	97/03/31			9700000			1 2		-	<del> </del>	G	97020076	97/03/31	Ĝ		97020077 97	97/03/31
								01100101	Ī	ľ	000000	97100176		2		!	$\dagger$	6	97020076	97/03/31	ı G	_	97020077 97	97/03/31
			7										11										-	-
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# ARMSTRONG LABORATORY

Occupational & Environmental Health Directorate/OEA 2402 E. Drive, Bldg 140 Brooks AFB, Texas 78235-5114 (210) 536-3626, FAX (210) 536-9043 WHITEMAN PROJECT 17

DATA SUMMARY FORM
'INORGANIC
Wastewater Samples
(mg/L)

	units	6.1	ô	۵	umhos		2	۵		<0.2 mUL	2		units	۵			İ		<10 ug/L		<0.005		<b>\$0.10</b>	!			<b>60.2</b>		14	0.3			á		(mg/L)		Detection	Melnog	
Volatile Suspended Solids	Turbidity	Surfactants	Suffides	Sulfates	Specific Conductance	Silica	Residue, Volatile	Residue, Nonfilterable	Residue, Filterable	Residue, Sellleable	Residue, Total	Langlier Index	Color	Chloride	Bromide	Alkalinity, Total	Acidity, Total	Group G	Phenois	Group E	Cyanide, Total	Group D	Phosphorus, Total	Phosphale, Ortho	Nitrate+Nitrite	Kjeldahl Nitrogen	Ammonia	Group C	TPH	Oil & Grease	Group B	Total Organic Carbon	COD	Group A	Compound	<b>A</b>	Tracking Numbers GP9/0220	Sample Numbers 9/0191/7; 196; 261; 335-341;	Date Collected 97/03/23
1	Z	6.1	<b>&lt;0.2</b>	33.2	461	NT	NT	2	269	<0.2	Z	Z	N	30.3	NT	NT	Z		-10		<b>\$0.005</b>		0.22	0.22	6.1	0.3	0.34	<del>                                     </del>	0.32	0.48		4	÷6		Result	7	GP9/02	7161076	97/03/23
970193		970193	970193	970193	9701934			9701934	9701934	9701934				9701934					97019339		97019338		97019337	97019337	97019337	97019337	97019337		97019336	97019336		97019335	97019335		NUMBER	OE OE	0	7, 196, 261	
97019340 97/03/26		97019340 97/03/26	97019341 97/03/27	97019340 97/03/26	97019340 97/03/26			97019340 97/03/26	0 97/03/26	97019340 97/03/26				97019340 97/03/26				-	97/03/31		97/03/27		7 97/03/31		97/03/31	97/03/31	97/03/31		97/03/26	97/03/26		97/03/31	97/03/31		Date		4	335-341;	
		Ð	-			-				80		L						<u>;</u>			L	Ĺ										Δ.	•		۹			9	9
NT	N	NT	0.6	NT	3	N.T	IN	NT	NT	N	NT	NT	T	NT	N,	NT	NT		6		<b>6</b> 0.005		ê.	6.1	6.1	0.4	<b>60.2</b>			0.32			<del>10</del>		Result		GP970221	7019178;	97/03/23
			97019347	_															97019346		97019345		97019344	97019344	97019344	97019344	97019344		97019343	97019343			97019342		NUMBER	OF CALIFORNIA PROPERTY		97019178; 197; 342-347;	
			97/03/27																97/03/31		97/03/27		97/03/28	97/03/28	97/03/28	97/03/28	97/03/28		97/03/26	97/03/26		97/03/31	97/03/31		Date			47:	
NT	NT.	NT	N	Z	N.	N.T	N,	Z	N.	N,	N	N,	Z	Z,	Z	Z	NT		Z		N		NI	N,	Z	N,	NT		0.8			N	NT		Q Result		GP970222	97019	97/03/23
						_		<u> </u>	<u> </u>																				97019348	97019348					NUMBER	S S S S S S S S S S S S S S S S S S S	222	97019179; 348;	23
																													48 97/03/26	48 97/03/26				_	ER Date	-			
												_																_	8	6	-		-	1	۵				
4	N	ô.	<b>6</b> 0.1	<u>.</u>	ω	Z	N.	-	-	<b>60.2</b>	Z,	Z	Z,	<1.0	Z,	N.	Z,		â		<0.005		<0.1	6.1	ô.1	0.6	<b>60.2</b>		N	3		4	10		Result		GP970223	9701919	97/03/23
97019353		97019353	97019354	97019353	97019353			97019353	97019353	97019353				97019353			İ		97019352		97019351		97019350	97019350	97019350	97019350	97019350					97019349	97019349		NUMBER		3	198; 350-354	ω
97/03/26		97/03/26	97/03/27	97/03/26	97/03/26			97/03/26	97/03/26	97019353 97/03/26			_ !	97/03/26					97/04/01	1	97/03/27			,	1		97/03/28		Ť				97/03/31		Date				
	_	<b>m</b>					_	_		æ				•	_	<u> </u>													1				1		٥	1			
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																																			Date				
1	1	+	+	+	-	1	+	+	+	1	1	7	$\top$	$\dagger$	Ī	1	i		İ	1	İ	İ	j	Ť	İ		Ī		İ	Ī			Ī	ŀ	0				

#### Method WHITEMAN PROJECT 17 III. Detection ug/L) 5.0 5.0 5.0 **5.0** \$ 50 6.0 **<**5.0 5.0 6.0 5.0 \$5.0 **\$**0 60 50 <u>\$</u> 5.0 50 \$50 <u>\$</u> -50 60 5.0 6.0 5.0 <u>\$</u>0 50 6.0 <5.0 ŝ 60 **.**50 60 Vinyl Chloride o-Xylene m-Xylene & p-Xylene 1,1,2-Trichloroethane 1,1,1-Trichloroethane Methylene Chloride Ethylbenzene trans-1,3-Dichloropropene cis-1,3-Dichloropropene trans-1,2-Dichloroethene 1,1-Dichloroethene 1,2-Dichloroethane 1,1-Dichloroethane 2-Chloroethylvinylether Carbon Tetrachloride Benzene Trichloroflouromethane Trichloroethene Tetrachloroethene 1,1,2,2-Tetrachloroethane 1,2-Dichloropropane 1,4-Dichlorobenzene 1,3-Dichlorobenzene 1,2-Dichlorobenzene Chloromethane Chloroform Chloroethane Chlorobenzene Bromomethane Bromoform Bromodichloromethane Foluene Dibromochtoromethane EPA 624 OR 601/602 Compound Tracking Numbers GP970220 Sample Numbers 97019177; 196; 261; 335-341; Date Collected 97/03/23 H20 POTABLE QC 97019177 NUMBER õ 97/03/26 Date D D D D D 0 0 .0 0 5,6 5,0 ,6 , b 5,6 0.6 **D**,0 5,0 5,6 9 9 ,**0 b**.e Ω Result 97/03/23 97019178; 197; 342-347; 66666666666666 6666 PRESERVATIVE QC GP970221 97019178 NUMBER R 97/03/26 Date 0 ō ъ 0 0 0 0 0 0 0 5 ь 0 0 σ 0 ۵ 0 • 0 0 0 0 5 97/03/23 97019179; 348; 666666666666 GP970222 6666666 ŝ 6 6 6 6 Result PITCHER BLK DATA SUMMARY FORM 97019179 97019179 97019179 97019179 97019179 97019179 97019179 97019179 97019179 97019179 97019179 97019179 97019179 97019179 97/03/27 97019179 97019179 97019179 97019179 97019179 97019179 97/03/27 NUMBER 97019179 97019179 97019179 97019179 97019179 97/03/27 **VOLATILE ORGANICS** 97019179 97019179 Wastewater Samples 97/03/27 Date 0 σ 6 0 0 0 0 0 0 0 0 0 0 5 5 0 0 0 0 0 0 0 6 0 0 0 ٥ σ • 97019198; 350-354 GP970223 3 3 Z Z Z N. Result ISCO EQUIP BLK 97/03/23 NUMBER OE Date ٥ Result NUMBER 유 Date ۵ Result NUMBER S Date ۵



# ARMSTRONG LABORATORY

Occupational & Environmental Health Directorate/OEA 2402 E. Drive, Bldg 140
Brooks AFB, Texas 78235-5114
(210) 536-3626, FAX (210) 536-9043
WHITEMAN PROJECT 17

INORGANIC
Wastewater Samples

DATA SUMMARY FORM

	Date Collected 1211 Chin	Try Partie													ı				
Method	Sample Numbers 97017721-27 & 97017742-45	97017721	-27 & 970177	42-45	<u> </u>			<u>                                      </u>			Ī								The second secon
Detection	Tracking Numbers   GN970200	GN97020	0		<u> </u> 			-			+								
		O MANAGEMENT	OE OE		<u> </u>		-	1			- 1								
(mg/L)	Compound	Result	NUMBER	Date	Q Re	Result OE NUMBER	BER Dale	Q Result	II OE NUMBER Date		0	Q Result	OE NUMBER	OE NUMBER Date Q	OE NUMBER   Date   Q Result	OE NUMBER Date Q Result OE NUMBER	OE NUMBER Date Q Result OE NUMBER Date Q	OE NUMBER Date Q Result OE NUMBER Date Q Result	OE NUMBER Date Q Result OE NUMBER Date Q
	Group A						_	$\exists$	_										
<b>^10</b>	COD	10	97017721	97/03/21						T	一								
	Total Organic Carbon	4	97017721	97/03/21						i									
	Group B										_ :					7, 1	7		7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7
<0.3	Oil & Grease	<0.3	97017722	97/03/17															
4	TPH	^	97017722	97/03/17															
	Group C																		
<b>60.2</b>	Ammonia	<0.2	97017723	97/03/20		-				-									
	Kjeldahl Nitrogen	<b>6</b> 02	97017723	97/03/20						$\dashv$									
<0.1	Nitrate+Nitrite	ô.1	97017723	97/03/20						- 1									
<0.1	Phosphale, Ortho	<0.1	97017723	97/03/20						_ 1									
<0.10	Phosphorus, Total	<0.1	97017723	97/03/20															
	Group D									_									
<b>&lt;</b> 0.005	Cyanide, Total	<0.005	97017724	97/03/13						-	_								
	Group E										$\dashv$								
<10 ug/L	Phenois	â	97017725	97/03/14		!													
	Group G																		
	Acidity, Total	Z									<del></del>						7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	
	Alkalinity, Total	NT T		!							_								
	Bromide	Z									_								
4	Chloride	3.8	97017726	97/03/18		-					_				-				
units	Color	N									_								
	er Ind	N,									-								
	Residue, Total	Z			<u> </u>			H		-	<del>: -</del>								
<0.2mL/L	<u> </u>	6.2	97017726	1	es ca					_	-								
۵	Residue, Filterable	۵	97017726	97/03/18	89			H		<u>                                      </u>	<u>-</u>								
	Residue, Nonfilterable	4	97017726	1	В	-	<u> </u>	-		_	÷								
	Residue, Voialile	^	97017726	97/03/18	89			H		<u>!</u>	<del></del>								
	Silica	N			<u> </u>						_	_							
umhos	Specific Conductance	N	97017726	97/03/18								i							
۵	Suffates	5.4	97017726	1		-													
6.1	Sullides	ê	97017727	97/03/13	<u> </u>														
	Surfactants	ô.	97017726	1	8			<u> </u>											
units	Turbidity	NT								L_ 	<u> </u>								
	Volatile Suspended Solids	^1	97017726	6 97/03/18	a	_	_	_		_	_								

75

## DATA SUMMARY FORM VOLATILE ORGANICS Wastewater Samples

		:					<50	30	3 2	3	600	\$5.0	5.0	\$5.0	<b>\$</b> .0	<5.0	<5.0	<5.0	<b>\$5.0</b>	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<b>&lt;</b> 5.0	<5.0	<b>&lt;</b> 5.0	<5.0	650	25.0		(ug/L)	Limit	Detection	Method		
		***************************************				very criticine		n-Xylene a p-Aylene	ě		nane				ethane	ĺ		loropropene			ene							nethane	ane		inylether		Chlorobenzene	Carbon Tetrachloride	Bromomethane	Bromotorm	Denzene	EPA 624 OR 601/602	Compound	•	Tracking Numbers GN970200	Sample Numbers 97017721-27 & 97017742-45	Date Collected 97/03/11	
						6	3 6	6 0	ô	6	\$ 6	6	6	6	6	ြ	Ĝ	Ĝ	Ĝ	ŝ	\$	ŝ	ŝ	6	Ĝ	ŝ	Ĝ	Ĝ	5	6	ŝ	ŝ	6	<u>ۍ</u> (	Ŝ d	à ô	6		Result	Rinse Water	GN97020	9701772	97/03/11	
						9/01//45	- 1	1	97017745	1	1	1		4	97017745	97017745				97017745	97017745	[	- 1	- 1	- 1	Ì	- 1	- I	f	- 1	- 1	- 1	i	- 1	070177745	- 1	97017745		OE NUMBER	Vater	0	1-27 & 970177		
						9//03/14	97/03/14	97/03/14	97/03/14	97/03/14	97/03/14	97/03/14	97/03/14	97/03/14	97/03/14	97/03/14	97/03/14	97/03/14	97/03/14	97/03/14	97/03/14	97/03/14	97/03/14	97/03/14	97/03/14	97/03/14	97/03/14	97/03/14	97/03/14	97/03/14	97/03/14	97/03/14	97/03/14	97/03/14	07/03/14	97/03/14	97/03/14		Date	1		42-45		
		-	+	-	-					<u> </u>														4		1	-						$\frac{1}{1}$	1	1	T			Q Re	<u> </u>				
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WHITEMAN	
AN PROJECT	
17	

### DATA SUMMARY FORM SEMI-VOLATILE ORGANICS Wastewater Samples (ug/L)

											(ug/L)													<u></u>
	Date Collected 97/03/23	97/03/23	106: 261: 225-241:	36.344		97/03/23	107- 342-347		97/03/23	3/40			97/03/23	350 354		$\perp$				$\perp$				<u> </u>
etection	Tracking Numbers	GP970220	0			GP970221	GP970221		GP970222	2		-	GP970223	3		_				+				<u> </u>
in the second		H20 POTABLE QC	ABLE QC			PRESERV	2		PITCHER BLK	문			ISCO EQI	15		$\coprod$			1	-	-			] ]
9/5	Compound	Result	NUMBER	Date	٥	Result	NUMBER Date	۵	Result	NUMBER	Date	۵	Result	NUMBER	Date	۵	Result	NUMBER	Date	교	Result	OE I	Date	۵
	EPA 626																		-			-1		
<b>\$</b>	Acenaphihene	<10	97019261	97/03/25		NT			10	97019262	97/03/25		Y.				_				_	-	_	ļ
<u>\$</u>	Acenaphlhylene	<b>10</b>	97019261	97/03/25		NT			<10	97019262	97/03/25		TN							-				
	Aldrin	ABSENT			۵	SEE EPA	EPA METHOD608		ABSENT			۵	SEE EPA	A METHODEOB	8					_				
ŝ	Anthracene	<10	97019261	97/03/25		NT			<b>&lt;10</b>	97019262	97/03/25		Z,							_				
	Aroclor 1260	ABSENT			۵	SEE EPA	SEE EPA METHOD608		ABSENT			۵	SEE EPA	A METHOD608	80									
ŝ	Benzidine	â	97019261	97/03/25		T			<del>1</del> 0	97019262	97/03/25													
ŝ	Benzo(a)anthracene	40	97019261	97/03/25		NT.			<b>^10</b>	97019262	97/03/25		NT											
ŝ	Benzo(a)pyrene	â	97019261	97/03/25		Z			<b>10</b>	97019262			NT							-				
ŝ	Benzo(b)fluoranthene	â	97019261	97/03/25		Z,			<10	97019262	97/03/25		NT							-				
ŝ	Benzo(g,h,i)perylene	ô	97019261	97/03/25		Z			<del>6</del>	97019262			NT							_				
ኇ	Benzo(k)fluoranthene	â	97019261	97/03/25		NT			<10	97019262			NT											
	bela-BHC	ABSENT	_		۵	SEE EPA	SEE EPA METHOD808		ABSENT	_		d	SEE EPA	PA METHOD608	08									
	delta-BHC	ABSENT			۵	SEE EPA	SEE EPA METHOD808		ABSENT			۵	m	PA METHODEOS	08									
ŝ	Bis(2-chloro ethoxy)methane	â	97019261	97/03/25		Z		_	ŝ	97019262	97/03/25		TN											
ŝ	Bis(2-chloro ethyl)ether	<del>10</del>	97019261	97/03/25		Z			â	97019262	97/03/25		Z											
ŝ	Bis(2-chloroisopropyl)ether	60	97019261	97/03/25	Ī	Z			40	97019262	97/03/25		2							_			<u> </u>	
ŝ	Bis(2-ethylhexyl)phthalate	Ŷ10	97019261	97/03/25		N.		<u> </u>	á	97019262	97/03/25		Z							_				
ŝ	4-Bromophenyl Phenyl Ether	10	97019261	97/03/25	Γ	N.			66	97019262	97/03/25	İ	N							<u> </u>				1
3	Butylbenzylphthalate	10	97019261	97/03/25		Z			â	97019262	97019262 97/03/25	!	NT									<u> </u>	<u> </u>	
	Chlordane	ABSENT	-		۵	SEE EP	EPA METHOD608		ABSENT	¬ ·		10	m	EPA METHOD608	508					<u> </u>			_	1
6	4-chloro-3-methyl Phenol	-10	97019261	97/03/25	İ	Z			410	97019262	97/03/25	İ	Z	1						ļ_	<u> </u> 			<u> </u>
5	2-chloronaphthalene	â	97019261	97/03/25	İ	3			10	97019262	97/03/25	T	Z,							_		-		
ŝ	2-chlorophenol	10	97019261	97/03/25	-	Z			<b>^10</b>	97019262	2 97/03/25	<del> </del>	N.	:				:	:	·	:	:		
	4-chlorophenyl Phenyl Ether	<b>^10</b>	97019261	97/03/25	<del>:</del>	Z			<b>10</b>	97019262	2 97/03/25	-	Z		:	<del>.</del>		:	:	<del>: -</del>		!	:	
ŝ	Chrysene	10	19761076	CZICOLIE	i	2			12	Tazatoze T	2 97/03/25	t	2			-		-		1	-			!
	4,4-DDD	ABSENT	7		۵	SEE EP	SEE EPA METHOD608	_	ABSENT	-		a	SEE EP	SEE EPA METHOD608	608					_			-	
	4,4-DDE	ABSENT	7		۵	SEE EP	SEE EPA METHOD808		ABSENT	-		a	SEE EP	SEE EPA METHOD608	608	-				_				
	4,4-DDT	ABSENT	7		۵	SEE EP	SEE EPA METHOD608		ABSENT	7		a	SEE EP	PA METHODEOB	808	<u> </u>				<u> </u>				
	Dieldrin	ABSENT	17		۵	SEE EP	SEE EPA METHOD608		ABSENT	7		۵	SEE EP	PA METHOD608	608									
5	Dibenzo(a,h)anthracene	40	97019261	97/03/25		N			10	97019262	2 97/03/25	-	Z		     	-				_		!	i i	1
ŝ	1,2-Dichlorobenzene	<b>10</b>	97019261	97/03/25	<del> </del>	Z			<b>10</b>	97019262	2 97/03/25	H	Z			_								
ŝ	1,3-Dichlorobenzene	<b>^10</b>	9701926	97019261 97/03/25	-	N			60	97019262	2 97/03/25	-	Z			_								
<u>.</u>	1,4-Dichlorobenzene	10	97019261	97/03/25	<del>-</del>	Z			<del>10</del>	97019262	2 97/03/25	<del> </del>	N											
ŝ	3,3-Dichlorobenzidine	10	97019261	97/03/25	<u></u> 	Z			10	97019262	2 97/03/25	<u> </u>	Z											
ŝ	2,4-Dichtorophenol	<b>^10</b>	97019261			Z,			<10	97019262	2 97/03/25		Z											
ŝ	Diethylphthalate	<b>^10</b>	97019261	97/03/25		Z			<b>~10</b>	97019262	2 97/03/25		Z			_								-
ŝ	2,4-Dimethylphenol	â	97019261		$\vdash$	Z	-		<b>^10</b>	97019262	2 97/03/25		2											
5	Dimethylphthalate	â	97019261	97/03/25	-	Z			â	97019262	82 97/03/25	-	2											
6	Di-n-Bulylphthalate	<b>10</b>	97019261	97/03/25	-	2			<b>^10</b>	97019262	32 97/03/25	-	N,											
Ĝ	Di-n-Octylphthalate	ŝ	97019261	1 97/03/25	+	N <sub>1</sub>			á	97019262	32 97/03/25	-	Z			-								
ŝ	4.6-Dinitro-2-Methylphenol	<b>^10</b>	9701926	97019261 97/03/25	-	NT		L	<10	9701926	97019262 97/03/25	Ë	NT			_								

Dec Catacle	1	WORLEMAN PROJECT 17			,	-				•	DA	TA SI	DATA SUMMAR	RY	FORM	RM				1		l			
Description   Property   Proper										40	SEMI-V	/OLAT Wastew	ILE OR	GAN	IICS (	cont'd)									
Compound   Compound		Date Collected	97/03/2	3			97/03/23			9	rciron,		(ug/L)		20000										4
Procession   Process   P	ethod	Sample Numbers	970191	77; 196; 26	1; 335-341;		97019178	3; 197; 342-	-347;	97	7019179	348		(0) ("	7019198	350-354		$\perp$							1 1
Compound   Compound	imit	racking Numbers	B GP9702	20			GP97022	_		G	P970222				P97022										i
Compound   Compound	į		HZO PO	OE OE	- "		PRESER	VATIVE QC		2	TCHER B	Ę			SCO EQ	P BLK								1	1
Consistencies (10 9010205 MT	Ţ.	Compound	Result	NUMBE		۵	Result	NUMBER	_			UMBER	Date	0	<u> </u>	OE NUMBER				e e				90	- ;
2.4-Districtolumens	۵ ۵	2.4-Unitropnenol	â	9701926			TIN			Δ			97/03/25				Carlo		1108011	NOMBEK	Date	ء	Result	NUMBER	ø
Rusenin	G d	2 4-Dinitrololuene	â	9701926	97/03/25		NT			<u> </u>		7019262	97/03/25	-	7							İ			1
Fluores	ŝ	Fluoranihana	à	9/01926	97/03/25		Z			Δ		7019262	97/03/25	7	=							1			ļ
Headshlorohadeinen	ŝ	Fluorene	â	9701926	97/03/25	İ	2 2			Δ	_	7019262	97/03/25	7	=										- 1
Heachtocyclopenidation   4/10   97019261   970325   NT   4/10   97019261   970325   NT   4/10   97019261   970325   NT   4/10   97019261   970325   NT   4/10   97019261   970325   NT   4/10   97019261   970325   NT   4/10   97019261   970325   NT   4/10   97019261   970325   NT   4/10   97019261   970325   NT   4/10   97019261   970325   NT   4/10   97019261   970325   NT   4/10   97019261   970325   NT   4/10   97019261   970325   NT   4/10   97019262   970325   NT   4/10   97019262   970325   NT   4/10   97019261   970325   NT   4/10   97019261   970325   NT   4/10   97019261   970325   NT   4/10   97019261   970325   NT   4/10   97019261   970325   NT   4/10   97019262   970325   NT   4/10   97019261   970325   NT   4/10   97019261   970325   NT   4/10   97019261   970325   NT   4/10   97019261   970325   NT   4/10   97019261   970325   NT   4/10   97019261   970325   NT   4/10   97019261   970325   NT   4/10   97019261   970325   NT   4/10   97019262   970325   NT   4/1	ŝ	Hexachlorobenzene	6	9701926	97/03/25	İ	Z			1	Ļ	7019262	97/03/25		7							7			-
Heachlorospination	ß	Hexachlorobutadiene	á	9701926	1 97/03/25		N			2 4	1		97/03/25					Ĺ							Ì
Indian(1,23-d)pyrene   (10 970)225 970/325   VIT   (40 970)225 970/325   (40 970)225 9	S	Hexachlorocyclopentadiene	â	9701926	1 97/03/25		Z			<u> </u>			97/03/25					Ī							
Indipitation	6 0	Indenni 1 2 3-c dinvrene	6	9701926	97/03/25		Z			Δ	Ш	7019262	97/03/25	7	7			I	_			T			
A.4.Neitylandelaniiria	6	Isophorone	â	9701926	97/03/26	1	Z   Z			Δ.	Ļ		97/03/25		٦							Ť			ĺ
Naphthalene		4,4-Methylenedianiline	<b>^10</b>	9701926	1 97/03/25		Z :			1 1	$\perp$		9//03/25												1
N-Microsodin-Propinamine   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <10   9701928   970325   NIT   <1	ŝ	Naphthalene	Ŷ10	9701926	11 97/03/25		×,			1	1		97/03/25							   					
Nitrobancain   String   Stri	<u>۸</u>	N-Nitrosodi-n-Propylamine	ήο	9701926	97/03/25		Z			Δ	-		97/03/25	7/2	7 -			1			1				
2-Nitrophenol (10 9701926) 970325 NT (10 9701	ŝ	Nirobeoxeco	â	9701926	1 97/03/25		Z			Δ			97/03/25	7	7							-			i
A-Ninophenol   <10   97019261   970325   NT   <10   97019262   970325   Peniachtorophenol   <10   97019261   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT   <10   97019262   970325   NT	ŝ	2-Nitrophenol	á	9701026	07/03/25	İ	Z			Δ		7019262	97/03/25	7	=			İ				1			
Penlachtrophenol   <10	ŝ	4-Nitrophenol	<u> </u>	9701926		-	2 2			1 4		7019262	97/03/25		17							Ì			ļ
Phenointhrene	Ĝ	Pentachtorophenol	â	9701926			Z,			<u> </u>	$\perp$		97/03/25	212	1 7										;
Pyrane	6	Phenaninrene	á	9701926	1 97/03/25		Z			<u> </u>	_	7019262	97/03/25	-	7						-	Ī			
Toxisphene   ABSENT   1703/25   0   STEEPA METHOD608   ABSENT   1,2,4-Trichlorobenzene   <10   97019261   9703/25   NT   <10   97019262   9703/25   2,4,6-Trichlorophenol   <10   97019261   9703/25   NT   <10   97019262   9703/25   2,4,6-Trichlorophenol   <10   97019261   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   97019262   9703/25   0     <10   9	İ	Pyrene	â	9701926	97/03/25		NT I			<u> </u>	Ш	7019262	97/03/25	7	7							I		-	1
1.2.4-Trichlorobenzene		Toxephene	ABSEN			1	SEE EDA	NETUCO:		:  △			97/03/25	i	=							T			1
2.4.6-Trichlorophenol <10 97019261 97/03/25 NT	ŝ	1,2,4-Trichlorobenzene	ŝ		97/03/25	6	NT ET A	METHODO	300	.   ≥	Z			!	EE EPA	METHOD6	8					Ì			
	S	2,4,6-Trichlorophenol	40	9701926	1 97/03/25		N			2 2		7019262	97/03/25												1
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SEMI-VOLATILE ORGANICS
Wastewater Samples

(J/gu)	

Method	Date Collected 97/03/11 Sample Numbers 97/01/721-27 & 97/01/742-45 Tracking Numbers (SN97/220)	97/03/11 9701772	1-27 & 970177	742-45																			
Limit	•	Rinse Water	Vater																				
(ug/L)	Compound	Result	OE NUMBER	₹ Date	۵	Result	OE NUMBER	R Date	Q R	Result OE	OE NUMBER Date		$\sim$	OResu	Result	Result	Result OF NUMBER Date O	Result OF NUMBER Date O Pacult	Result OF NUMBER Date O Pacult	Result OF NIMBER Date O Beauty OF NIMBER DATE	Result OF NIMBER Date O Beauty OF NIMBER DATE	Result OF NIMBER Date O Beauty OF NIMBER Date	Result OF NIMBER Dale O Best Of A THOUSE DATE OF THE OFFICE OFFICE OFFICE OFFICE OFFICE OFFICE OFFICE OFFICE OFFIC
	EPA 625								H											The state of the s	To the state of th	MINORIA MINORIA	To the state of th
6 6 8 8	Acenaphihene	10	97017743	97/03/18	0				H					$\prod$									
Ą	Aldrin	ABS	97017743	97/03/16	o 1			+	$\top$	+		_		Ť									
\$ 2	Anthracene	â	97017743	97/03/18	<b>-</b>			+	$\dashv$	+				Ī									
	Aroclor 1260	ABS	97017743	97/03/18	ъ			1	7	1		1		Ť									
\$5 Be	Benzidine	<10	97017743	97/03/18	0				+	+		1		1									
	Benzo(a)anthracene	ê	97017743	97/03/18	<b>5</b>			1	-	_				$\dagger$									
	Benzo(a)pyrene	â	97017743	97/03/18	8					-													
İ	Benzo(b)fluoranthene	3	97017743	97/03/18	0				1	1													
	Benzo(g,h,i)perylene	á	97017743	97/03/18	σ					-			+	+									
	Benzo(k)fluoranthene	<b>^10</b>	97017743	97/03/18	0			-	1	1			+	1									
ье	beta-BHC	ABS	97017743	97/03/18	0	-			+	+		1	+										
2	delta-BHC	ABS	97017743	97/03/18	0				$^{\dagger}$	1		- 1	_										
	Bis(2-chloro ethoxy)methane	â	97017743	97/03/18	σ							- 1	1	+									
1	Bis(z-chioro einyi)einer	ŝ	97017743	97/03/18	0																		
	Bis(2-chloroisopropyl)ether	SZ	97017743	97/03/18	0								-										
	ois(z-einyinexyi)phinaiaie	ŝ	97017743	1	0																		
G (	Bulvibenzylohthalate	3 3	97017743	- 1	, 0				Ť	1			1										
	Chlordane	ABS	97017743	97/03/18	<b>G</b> (			-	+	-			i										
	4-chloro-3-methyl Phenol	ô	97017743	97/03/18	5			+	+	+													
<u>L</u>	2-chloronaphthalene	SN	97017743	!	σ			_	7	+			_	Ì									
	2-chlorophenol	â	97017743	97/03/18	o																		
6 d	Chrysene	3 2	97017743	97/03/18	, 0			-	Ŧ	$\perp$			<del>: -</del>	ĺ									
4	4,4-DDD	ABS	97017743		0			1	1	1			<del>-</del>										
4	4,4-DDE	ABS	97017743	97/03/18	0					_													
4 0	4,4-DDT	ABS	97017743	1	0								-					•					
6	Dibenzo(a h)anthracana	ABS	97017743		0				1	_			+-										
	1,2-Dichlorobenzene	â	97017743	97/03/18	<b>5</b> 6			-	Ŧ	+			+	ļ									
Ĺ	1,3-Dichlorobenzene	â	97017743		0				+	+			1										
<u> </u>	1,4-Dichlorobenzene	ê	97017743	97/03/18	5					-				İ									
	3,3-Dichlorobenzidine	ô	97017743	97/03/18	0					_			!										
<5 2	2,4-Dichlorophenol	á	97017743		Б				1	-				1									
_	Diethylphlhalale	ê	97017743	:	σ				_	_			<del>-</del>	-									
İ	2.4-Dimethylphenol	â	97017743	<u>:</u>	5				! i					i									
	Dimethylphinalate	â	97017743	_	0							_											
	Di-n-Bulylphihalate	â	97017743		0			-					1 1										
	City Conjunitation	ź	Sh111016	97/03/10	7 0			<u> </u>								_	_		The state of the s				

# DATA SUMMARY FORM

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		_		-			-			<u> </u>	-						L	1				-						3	1	- T	İ	1	į		L	, 6		<u>۸</u>		1		z	5		4-	6	L				\$ =						-					Š								
																											2,4,6-Trichtorophenol	1,2,4-Irichlorobenzene		Toxachene	Pyrene	THEFT	Shoot Shoot	Phenanthrene	Pentachtorophenol	Total double.	Nirophenol	2-Nitrophenol	vitrobenzene	w-minosocipilariyiailiina	Nikosodiobooulogio	N-Nitrosodi-n-Propylamine	vapninaiene	Nonhibologo	.4-Methylenedianitine	Isophorone	indend (1,2,3-c,d)pyrene	denote 3 a diamana	Hexachloroethane	fexachlorocyclopentadiene	Hexachtorobutadiene	Hexachlorobenzene	Fluorene	Fluoranihene	Z,4-Dinitrototuene	The state of the s	6-Dinitrototuene	2,4-Dinitrophenol	Compound	-		Tracking Numbers GN970200	Ch-74111016 to 17-1711016 cloquing olduno	Sample Numbers	Date Collected 97/03/11					
				-			-	-							1			-								-	â	â		ARS	6	é		<10	<b>^10</b>	ć	3 1	10	3	ź	5	â	ê		ABS	â	6	3	â	S	<b>^10</b>	6	á	â	6	á	3	10	Results		Rinse Water	GN9702	970111	9701775	97/03/11					
				-			-				-				-											-	97017743	97017743	0,01	97017743	97017743	9/01//43	200	97017743	97017743	8/01//43	0.000	97017743	97017743	8/1/1/43	01 66 1060	97017743	97017743	0101110	97017743	97017743	9/01//43	2000	97017743	97017743	97017743	97017743	97017743	97017743	97017743	01011110	07017743	97017743	OE NUMBER		Water	8	1710/6 0 17-1	1 27 8 070177					٠	
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> Tracking Numbers CN970244 & GN970244 Date Collècted 97/03/26 Sample Numbers 97/02/051; 59: 68: 75; 103-106;

97020182

9720052; 60; 69; 76; 107-113;

97020053, 61, 70, 77, 114-120

97/03/26

## DATA SUMMARY FORM

### SEMI-VOLATILE ORGANICS

97/03/26 97020064; 80; 135-137; 97020081; 82; 83; 176-181 CN970257 & GN970257 SITE 18 97/03/26 Wastewater Samples (1/gu) 97/03/26 97/03/26

NUMBER   Date   Q						:				1				1					10000	200,100	10	_	3/020033, 01, 70, 77, 114-120		4. 11. 1
Property   Property	etection	Tracking Numbers	CN9/0244	& GN97024	44	<u> </u>	CN970252	& GN970252	:	<u>।</u>	4970257 &	GN970257	'		N970259			_	N970245	& GN97024	5	_	2	970246 8	CN970246 & GN970246
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Principle   Prin	19,47		Vescil	NOMBEN	Date	L	-	1	L	L	L	NUMBER	L	ᆫ	linse	NUMBER	Date		Result	NUMBER	Date	_	Res	L	ult NUMBER
Accomplishisms   CO   CO   CO   CO   CO   CO   CO   C		EPA 625					-																	ı	ı
Accomplyinging   Acco	5	Acenaphihene		97020051	97/03/31	-	NT			Δ		_	97/03/31	Ţ	7						97/03/31	!	6	_	97020053 97/03/31
All All All All All All All All All Al	ŝ	Acenaphthylene		97020051	97/03/31		3			Δ			97/03/31	_	7		ļ	_			97/03/31	i	â	<u> </u>	97020053 97/03/31
Acciding 1989   90700051   9170031   1 MT   91700006   9070031   9170031   9170031   9170031   9170031   9170031   9170031   9170031   9170031   9170031   9170031   9170031   9170031   9170031   9170031   9170031   9170031   9170032   9170032   9170032   9170032   9170032   9170032   9170032   9170032   9170032   9170032   9170032   9170032   9170032   9170032   9170032   9170032   9170032   9170032   9170032   9170032   9		Aldrin		97020051	97/03/31		SEE EPA	METHOD608		≥			97/03/31	1	ш	THOD608			_!		97/03/31	<b>a</b>	ABSE :	÷	97020053
Ancocy 1999   Principle   Pr	5	Anthracene		97020051	97/03/31	-	N,			<u> </u>	-		97/03/31		- 1			1		- 1	97/03/31	ء ا	â	-+	97020053
Benucipientemane   100   9702005   107031   NT     101   202006   270201   NT     101   202		Aroclor 1260		97020051	97/03/31		SEE EPA	METHOD608		>	-		97/03/31		m	THOD608			E		97/03/31		ABSEN		97020053
Bancacjalprienezame   C100   97020051   970201   MT   C10   97020052   970201   MT   C10	3	Benzidine	-100 -	97020051	97/03/31	-	Z	:	<u> </u>	^	<u> </u>		97/03/31			1			L		97/03/31		6		97020053
	ŝ	Benzo(a)anthracene	<u>1</u> 8	97020051	97/03/31	_	N I		<u> </u>	_		97020082	97/03/31		Í					i	97/03/31		â	_+	
Baracigi Discontinenee   1-00   97020051   9702011   NT   1-00   97020052   9702011   NT   1-00	ŝ	Benzo(a)pyrene	100	97020051	97/03/31	-	NT			. ^		97020082	97/03/31	_	<b>1</b>					į	97/03/31		6	_	
Partolicy   Part		Benzo(b)fluoranthene	<b>100</b>	97020051	97/03/31	-	N			^			97/03/31	_	=			į			97/03/31	9	10		
Description of the process   Proce	ŝ	Benzo(g,h,i)perylene	<b>1</b> 00	97020051	97/03/31	-	Z	:		^			97/03/31	_	4					- 1	97/03/31	9 :	6	<del></del>	
Daile BHIC   ABSENT 917020051   9170201   0,1 SEE EPA METHODOSIS   0,	ŝ	Benzo(k)fluoranthene	÷180	97020051	97/03/31	-	NT			٨			97/03/31	_	4					i	97/03/31		<b>1</b> 0	-	
Color   Colo	:	bela-BHC	ABSENT	97020051	97/03/31		SEE EPA	METHOD608		>		97020082	97/03/31		m	THODGOB			Ë	97020052	97/03/31	0.0	ABSEN	+	97020053
Balt C-bloos althoxy/mathrant   1-00   9702005   9702031   NT   1-00   9702005   9702031   NT   1-00   9702005   9702031   NT	!	delta-BHC	ABSENT	97020051	97/03/31	.0	SEE EPA	METHOD608		>		97020082	97/03/31		m :	THOD608				- 1	97/03/31	e a	ABSEN		97020053
Bid C-abloce enhyllehem   100   91/20051   91/3031   NT   200   91/20051   91/3031   NT   200   91/20051   91/3031   NT   200   91/20051   91/3031   NT   200   91/20051   91/3031   NT   200   91/20051   91/3031   NT   200   91/20051   91/3031   NT   200   91/20051   91/3031   NT   200   91/20052   91/2031   NT   200   91/20052   91/2031   NT   20	ŝ	Bis(2-chloro ethoxy)methane	100	97020051	97/03/31	-	Z			^			97/03/31								97/03/31	o	â		97020053
Balt2-deplication proprigination   Clop   Strocker   Front	<u>.</u>	Bis(2-chloro ethyl)ether	<b>^100</b>	97020051	97/03/31	-	Z	i : :		^			97/03/31		NT.		- !	i		- 1	97/03/31		6	+	
Bid2 Additionaly phyninalism   289   97020051   970201   1 NIT   40   97020052   9702031   1 NIT   40   97		Bis(2-chloroisopropyl)elher	100	97020051	97/03/31	-	N.			^			97/03/31		NT.				â	97020052	97/03/31		<del>6</del>	i	
A+Biomophynylphnajus   A+Biomophynylphnajus	6	Bis(2-ethylhexyl)phthalate	289	97020051	97/03/31	-	Z			^		97020082	97/03/31		NT			i	â	97020052	97/03/31	- :	6	<u>!</u>	
Discriptomyphinialation   Ci00   SPIZZZZZZ   SPIZZZZZ   CIVII   CION   SPIZZZZZZ   SPIZZZZZ   CIVII   CION   SPIZZZZZZ   SPIZZZZZ   CIVII   CION   SPIZZZZZZ   SPIZZZZZ   CIVII   CION   SPIZZZZZZ   SPIZZZZZ   CIVII   CION   SPIZZZZZZ   SPIZZZZZ   CIVII   CION   SPIZZZZZZ   SPIZZZZZ   CIVII   CION   SPIZZZZZZ   SPIZZZZZ   CIVII   CION   SPIZZZZZZ   SPIZZZZZ   CIVII   CION   SPIZZZZZZ   SPIZZZZZ   CIVII   CION   SPIZZZZZZ   SPIZZZZZ   CIVII   CION   SPIZZZZZZ   SPIZZZZ   CIVII   CION   SPIZZZZZ   SPIZZZZ   CIVII   CION   SPIZZZZZ   SPIZZZZ   CIVII   CION   SPIZZZZZ   SPIZZZZ   CIVII   CION   SPIZZZZZ   SPIZZZZ   CIVII   CION   SPIZZZZZ   SPIZZZZ   CIVII   CION   SPIZZZZZ   SPIZZZZ   CIVII   CIVII   CION   SPIZZZZZ   SPIZZZZ   CIVII   CION   SPIZZZZZ   SPIZZZZ   CIVII   CION   SPIZZZZZ   SPIZZZZ   CIVII   CION   SPIZZZZZ   SPIZZZZ   CIVII   CION   SPIZZZZZ   SPIZZZZ   CIVII   CION   SPIZZZZZ   SPIZZZZ   CIVII   CION   SPIZZZZZ   SPIZZZZ   CIVII   CION   SPIZZZZZ   SPIZZZZ   CIVII   CION   SPIZZZZZ   SPIZZZZ   CIVII   CION   SPIZZZZZ   SPIZZZZ   CIVII   CION   SPIZZZZZ   SPIZZZZ   CIVII   CION   SPIZZZZZ   SPIZZZZ   CIVII   CION   SPIZZZZ   SPIZZZZ   CIVII   CION   SPIZZZZ   SPIZZZZ   CIVII   CION   SPIZZZZ   SPIZZZZ   CIVII   CION   SPIZZZZ   SPIZZZZ   CIVII   CION   SPIZZZZ   SPIZZZZ   CIVII   CION   SPIZZZZ   SPIZZZZ   CIVII   CION   SPIZZZZ   SPIZZZZ   CIVII   CION   SPIZZZZ   SPIZZZZ   CIVII   CION   SPIZZZZ   SPIZZZZ   CIVII   CION   SPIZZZZ   SPIZZZZ   CIVII   CION   SPIZZZZ   SPIZZZZ   CIVII   CION   SPIZZZZ   SPIZZZZ   CIVII   CION   SPIZZZZ   SPIZZZZ   CIVII   CION   SPIZZZZ   SPIZZZZ   CIVII   CION   SPIZZZZ   SPIZZZZ   CIVII   CION   SPIZZZZ   SPIZZZZ   CIVII   CION   SPIZZZZ   SPIZZZZ   CIVII   CION   SPIZZZZ   SPIZZZZ   CIVII   CION   SPIZZZZ   SPIZZZZ   SPIZZZZ   CIVII   CION   SPIZZZZ   SPIZZZZ   CIVII   CION   SPIZZZZ   SPIZZZZ   CIVII   CION   SPIZZZZ   SPIZZZZ   CIVII   CION   SPIZZZZ   SPIZZZZ   SPIZZZZ   SPIZZZZ   SPIZZZZ   CIVII   CION   SPIZZZZ   SPIZZZZ   CIVII   CION   SPIZZZZ   SPIZZZZ	ŝ	4-Bromophenyl Phenyl Ether	<u>^1</u> 8	97020051	97/03/31	-	N			Α.			97/03/31		N				ô	97020052	97/03/31	1	6	!	
Chloridania   Chloridania	ŝ	Butylbenzylphthalate	<u>^1</u> 8	97020051	97/03/31	-	Z			٨			97/03/31		¥,				<del>6</del>	97020052	97/03/31	!	â		
4-chiloro-3-mielhyl-Phenol   ci00   g7020051   g70231   ci   ci   ci   ci   ci   ci   ci   c		Chlordane	ABSENT	97020051	97/03/31	.0	SEE EPA	METHOD608		Þ	-		97/03/31			ETHOD608				•	97/03/31	9.0	ABSEN	_	97020053
2-chlorophanuhllasina (100 97020051 970331 I NIT (100 97020062 970331 I NIT (100 97020052 970331 I NIT	6	4-chloro-3-methyl Phenol	<u>^1</u> 8	97020051	97/03/31	-	N			^	ō		97/03/31					-			97/03/31	0	3	<u>:</u>	97020053
Pachinophenol   Clob   P7020051   P70033   Cl   NT   Clob   P7020051   P70033   Cl   NT   Clob   P7020051   P70033   Cl   NT   Clob   P7020051   P70033   Cl   NT   Clob   P7020051   P70033   Cl   NT   Clob   P7020051   P70033   Cl   NT   Clob   P7020051   P70033   Cl   SEE EPA METHOD668   ABSENT   P7020052   P70033	. <b>6</b>	2-chloronaphthalene	<b>100</b>	97020051	97/03/31	:-	N	<u>:</u>			5		97/03/31		3				10	97020052	97/03/31	,	â	_	
A-Chiophanyi Finanyi	Ĝ	2-chloraphenol	200	97020051	97/03/31	_	NT				6		97/03/31	!	¥,				10	97020052	97/03/31	- 1	10	i	
Chrysene   Chrysene	, û	4-chlorophenyl Phenyl Ether	<u>1</u> 00	97020051	97/03/31	_	NT			^	6		97/03/31		N,				ô	97020052	97/03/31		<10		
A4-DUD   ABSENT 97020051 97103/31   ABSENT 97020050 97103/31   ABSENT 970	ŝ	Chrysene	<u>^1</u> 00	97020051	97/03/31	-	:			<u> </u>	10	97020082	97/03/31		- N					97020052	97/03/31		<b>~10</b>		97020053 97/03/31
A4-DDE   A	:	4.4.000	ABSENT		97/03/31	.0	SEE EPA	METHOD608		-	BSENT		97/03/31	i	SEE EPA M	ETHOD608				97020052	97/03/31		ABSEN	_	1 97020053 97/03/31
A4-DUT   ABSENT   97020051   9703/31   of   SEE EFA METHOD608   ABSENT   97020062   9703/31   of   SEE EFA METHOD608   ABSENT   97020062   9703/31   of   SEE EFA METHOD608   ABSENT   97020062   9703/31   of   SEE EFA METHOD608   ABSENT   97020062   9703/31   of   SEE EFA METHOD608   ABSENT   97020062   9703/31   of   SEE EFA METHOD608   ABSENT   97020062   9703/31   of   SEE EFA METHOD608   ABSENT   97020062   9703/31   of   SEE EFA METHOD608   ABSENT   97020062   9703/31   of   SEE EFA METHOD608   ABSENT   97020062   9703/31   of   SEE EFA METHOD608   ABSENT   97020062   9703/31   of   SEE EFA METHOD608   ABSENT   97020062   9703/31   of   SEE EFA METHOD608   ABSENT   97020062   9703/31   of   SEE EFA METHOD608   ABSENT   97020062   9703/31   of   SEE EFA METHOD608   ABSENT   97020062   9703/31   of   SEE EFA METHOD608   ABSENT   97020062   9703/31   of   SEE EFA METHOD608   ABSENT   97020062   9703/31   of   SEE EFA METHOD608   ABSENT   97020062   9703/31   of   SEE EFA METHOD608   ABSENT   97020082   9703/31   of   SEE EFA METHOD608   ABSENT   97020082   9703/31   of   SEE EFA METHOD608   ABSENT   97020082   9703/31   of   SEE EFA METHOD608   ABSENT   97020082   9703/31   of   SEE EFA METHOD608   ABSENT   97020082   9703/31   of   SEE EFA METHOD608   ABSENT   97020082   9703/31   of   SEE EFA METHOD608   ABSENT   97020082   9703/31   of   SEE EFA METHOD608   ABSENT   97020082   9703/31   of   SEE EFA METHOD608   ABSENT   97020082   9703/31   of   SEE EFA METHOD608   ABSENT   97020082   9703/31   of   SEE EFA METHOD608   ABSENT   97020032   9703/31   of   SEE EFA METHOD608   ABSENT   97020032   9703/31   of   SEE EFA METHOD608   ABSENT   97020032   9703/31   of   SEE EFA METHOD608   ABSENT   97020032   9703/31   of   SEE EFA METHOD608   ABSENT   97020032   9702033   of   STO20082   9703/31   of   STO20082   9703/31   of   STO20082   9703/31   of   STO20082   9703/31   of   STO20082   9703/31   of   STO20082   9703/31   of   SEE EFA METHOD608   ABSENT   97020032   9703/31   of   STO20082   9703/31   of   STO		4.4.DDE	ABSENT		4		SEE EPA	METHOD608		-	BSENT	<u></u>	97/03/31	1	SEE EPA M	ETHOD608			ABSENT	97020052	97/03/31	9,9	ABSEN	-	97020053
Diedrin   Diedrin   ABSENT   97020051   9703031   e1   SEE EPA METHODOR8   ABSENT   97020082   97103331   e1   Dienzola hjanthracene   <100   97020051   97103331   f   NT   <10   97020082   97103331   f   NT   <10   97020082   97103331   MT   <10   97020082   97103331   e1   NT   <10   97020082   97103331   e1   NT   <10   97020082   97103331   e1   NT   <10   97020082   97103331   e1   NT   <10   97020082   97103331   e1   NT   <10   97020082   97103331   e1   NT   <10   97020082   97103331   e1   NT   <10   97020082   97103331   e1   NT   <10   97020082   97103331   e1   NT   <10   97020082   97103331   e1   NT   <10   97020082   97103331   e1   NT   <10   97020082   97103331   e1   NT   <10   97020082   97103331   e1   NT   <10   97020082   97103331   e1   NT   <10   97020082   97103331   e1   NT   <10   97020082   97103331   e1   NT   <10   97020082   97103331   e1   NT   <10   97020082   97103331   e1   NT   <10   97020082   97103331   e1   NT   <10   97020082   97103331   e1   NT   <10   97020082   97103331   e1   NT   <10   97020082   97103331   e1   NT   <10   97020082   97103331   e1   NT   <10   97020082   97103331   e1   NT   <10   97020082   97103331   e1   NT   <10   97020082   97103331   e1   NT   <10   97020082   97103331   e1   NT   <10   97020082   97103331   e1   NT   <10   97020082   97103331   e1   NT   <10   97020082   97103331   e1   NT   <10   97020082   97103331   e1   NT   <10   97020082   97103331   e1   NT   <10   97020082   97103331   e1   NT   <10   97020082   97103331   e1   NT   <10   97020082   97103331   e1   NT   <10   97020082   97103331   e1   NT   <10   97020082   97103331   e1   NT   <10   97020082   97103331   e1   NT   <10   97020082   97103331   e1   NT   <10   97020082   97103331   e1   NT   <10   97020082   97103331   e1   NT   <10   97020082   97103331   e1   NT   <10   97020082   97103331   e1   NT   <10   97020082   97103331   e1   NT   <10   97020082   97103331   e1   NT   <10   97020082   97103331   e1   NT   <10   97020082   97103331   e1   NT   <10   97020082		4.4:DDT	ABSENT		1	.0	SEE EPA	METHOD608			BSENT	97020082	97/03/31	1	SEE EPA M	ETHOD608			ABSENT	97020052	97/03/31	9,9	ABSEN		97020053 97/03/31
Dibenzola hjanihracene   4100   97020051   97/03/31   1 NT   410   97020062   97/03/31   1 NT   410   97020062   97/03/31   0   1 NT	i	Dieldrin	ABSENT		97/03/31	.0	SEE EPA	METHOD60	-	L	BSENT	97020082	97/03/31	<u> </u>	SEE EPA M	ETHOD608			ABSENT		97/03/31	9,0	ABSEN	-	97020053
1.2-Dichlorobenzene   100   97020051   9703/31   1 NT   10   97020062   9703/31   0   1 NT   10   97020062   9703/31   0   1 NT   10   97020062   9703/31   0   1 NT   10   97020062   9703/31   0   0   97020052   9703/31   0   0   97020052   9703/31   0   0   97020052   9703/31   0   0   97020052   9703/31   0   0   97020052   9703/31   0   0   97020052   9703/31   0   0   97020052   9703/31   0   0   97020052   9703/31   0   0   97020052   9703/31   0   0   97020052   9703/31   0   0   97020052   9703/31   0   0   97020052   9703/31   0   0   0   0   0   0   0   0   0	Ĝ	Dibenzo(a,h)anthracene	<u>^</u>	97020051	97/03/31	<del>-</del>	N				ő	97020082	97/03/31		NT				<10		97/03/31	9	â		97020053
1.3-Dichlorobenzene   4100   97020051   97/03/31   1 NT   410   97020062   97/03/31   9     1.4-Dichlorobenzene   4100   97020051   97/03/31   1 NT   410   97020062   97/03/31   9     3.3-Dichlorobenzene   4100   97020051   97/03/31   1 NT   410   97020062   97/03/31   0     2.4-Dichlorobenzene   4100   97020051   97/03/31   1 NT   410   97020062   97/03/31   0     2.4-Dichlorobenzene   4100   97020051   97/03/31   1 NT   410   97020062   97/03/31   0     2.4-Dichlorobenzene   4100   97020051   97/03/31   1 NT   410   97020062   97/03/31   0     2.4-Dichlorobenzene   4100   97020051   97/03/31   1 NT   410   97020062   97/03/31   0     2.4-Dichlorobenzene   4100   97020051   97/03/31   1 NT   410   97020062   97/03/31   0     2.4-Dichlorobenzene   4100   97020051   97/03/31   1 NT   410   97020062   97/03/31   0     2.4-Dichlorobenzene   4100   97020051   97/03/31   0     2.4-Dichlorobenzene   4100   97020051   97/03/31   0     2.4-Dichlorobenzene   4100   97020051   97/03/31   0     2.4-Dichlorobenzene   4100   97020052   97/03/31   0     2.4-Dichlorobenzene   4100   97020051   97/03/31   0     2.4-Dichlorobenzene   4100   97020052   97/03/31   0     2.4-Dichlorobenzene   4100   97020052   97/03/31   0     2.4-Dichlorobenzene   4100   97020052   97/03/31   0     2.4-Dichlorobenzene   4100   97020052   97/03/31   0     2.4-Dichlorobenzene   4100   97020052   97/03/31   0     2.4-Dichlorobenzene   4100   97020052   97/03/31   0     2.4-Dichlorobenzene   4100   97020052   97/03/31   0     2.4-Dichlorobenzene   4100   97020052   97/03/31   0     2.4-Dichlorobenzene   4100   97020052   97/03/31   0     2.4-Dichlorobenzene   4100   97020052   97/03/31   0     2.4-Dichlorobenzene   4100   97020052   97/03/31   0     2.4-Dichlorobenzene   4100   97020052   97/03/31   0     2.4-Dichlorobenzene   4100   97020052   97/03/31   0     2.4-Dichlorobenzene   4100   97020052   97/03/31   0     2.4-Dichlorobenzene   4100   97020052   97/03/31   0     2.4-Dichlorobenzene   4100   97020052   97/03/31   0     2.4-Dichlorobenzene	: 	1,2-Dichtorobenzene	<u>^1</u> 8	97020051	97/03/31	-	Z			_	ő	97020082	97/03/31		N				<b>10</b>	97020052	97/03/31	0	ô		
1.4.Dichlorobenzene   1.00   97020051   97/03/31   1 NT   1.00   97020062   97/03/31   0   0   0   0   0   0   0   0   0	. 3	1,3-Dichlorobenzene	<u>^18</u>	97020051	97/03/31	-	N	1			6		97/03/31		NT				<b>^10</b>	97020052	97/03/31	60	â	į	
3.3-Dichlorobenzidine <100 97020051 97/03/31 f NT <10 97020052 97/03/31 g 2.4-Dichlorobenzidine <100 97020052 97/03/31 f NT <10 97020052 97/03/31 g 2.4-Dichlorophenol <100 97020051 97/03/31 f NT <10 97020052 97/03/31 g 2.4-Dichlorophenol <100 97020051 97/03/31 f NT <10 97020052 97/03/31 NT <10 97020052 97/03/31 g 2.4-Dichlorophenol <100 97020052 97/03/31 g 2.4-Dichlorophenol <100 97020051 97/03/31 f NT <10 97020052 97/03/31 NT <10 97020052 97/03/31 g 2.4-Dichlorophenol <100 97020052 97/03/31 g 2.4-Dichlorophenol <100 97020052 97/03/31 g 2.4-Dichlorophenol <100 97020052 97/03/31 g 2.4-Dichlorophenol <100 97020052 97/03/31 g 2.4-Dichlorophenol <100 97020052 97/03/31 g 2.4-Dichlorophenol <100 97020052 97/03/31 g 2.4-Dichlorophenol <100 97020052 97/03/31 g 2.4-Dichlorophenol <100 97020052 97/03/31 g 2.4-Dichlorophenol <100 97020052 97/03/31 g 2.4-Dichlorophenol <100 97020052 97/03/31 g 2.4-Dichlorophenol <100 97020052 97/03/31 g 2.4-Dichlorophenol <100 97020052 97/03/31 g 2.4-Dichlorophenol <100 97020052 97/03/31 g 2.4-Dichlorophenol <100 97020052 97/03/31 g 2.4-Dichlorophenol <100 97020052 97/03/31 g 2.4-Dichlorophenol <100 97020052 97/03/31 g 2.4-Dichlorophenol <100 97020052 97/03/31 g 2.4-Dichlorophenol <100 97020052 97/03/31 g 2.4-Dichlorophenol <100 97020052 97/03/31 g 2.4-Dichlorophenol <100 97020052 97/03/31 g 2.4-Dichlorophenol <100 97020052 97/03/31 g 2.4-Dichlorophenol <100 97020052 97/03/31 g 2.4-Dichlorophenol <100 97020052 97/03/31 g 2.4-Dichlorophenol <100 97020052 97/03/31 g 2.4-Dichlorophenol <100 97020052 97/03/31 g 2.4-Dichlorophenol <100 97020052 97/03/31 g 2.4-Dichlorophenol <100 97020052 97/03/31 g 2.4-Dichlorophenol <100 97020052 97/03/31 g 2.4-Dichlorophenol <100 97020052 97/03/31 g 2.4-Dichlorophenol <100 97020052 97/03/31 g 2.4-Dichlorophenol <100 97020052 97/03/31 g 2.4-Dichlorophenol <100 97020052 97/03/31 g 2.4-Dichlorophenol <100 97020052 97/03/31 g 2.4-Dichlorophenol <100 97020052 97/03/31 g 2.4-Dichlorophenol <100 97020052 97/03/31 g 2.4-Dichlorophenol <100 97020052 97/03/31 g 2.4-Dic	Ġ	1,4-Dichlorobenzene	<u>^18</u>	97020051	97/03/31	-	N				ô		97/03/31	i 	Z,				â	97020052	97/03/31	6	â		
2.4-Dichlorophenol < 100 97020051 97/03/31 I NT < 10 97020062 97/03/31 NT < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31 Q < 10 97020052 97/03/31	ŝ	3,3-Dichlorobenzidine	100	97020051	97/03/31	-	Z	!		_	6	97020082	97/03/31		¥,				숭	97020052	97/03/31	80	â		
Dishylphthalate   C100   97020051   97103/31   t   NT   C10   97020052   97103/31   g   Q   Q   Q   Q   Q   Q   Q   Q   Q	ŝ	2.4-Dichlorophenol	<b>^100</b>	97020051	:	_	Z				ô	97020082	97/03/31	į	NT		1	-	10	97020052	97/03/31	0 10	6		
2.4 Dimethylphenol   100   97020051   97103/31   1 NT		Diethylphthalate	<b>^1</b> 00	97020051		_	Z,				â	97020082			Z				10	97020052	97/03/31	0	â		
Dinethylphthelate   <100   97020051   97/03/31   f   NT         <10   97020062   97/03/31   0	G	2,4-Dimethylphenol	<b>^100</b>	97020051	97/03/31	-	N.				â	97020082			NT.	-	-	ĺ	â	97020052	97/03/31		â	1	
Di-n-Buly/phthalaite   <100   97020051   97/03/31   f   NT   <10   97020062   97/03/31   0     97/020062   97/03/31   0       97/020062   97/03/31   0       97/020062   97/03/31   0	ŝ	Dimethylphthalate	<b>^100</b>	9702005		-	N T				ô	97020082		i	NT			1	40	97020052	97/03/31		â		
Di-n-Octylphthalate   <100   97020051   97/03/31   f   NT     <10   97020052   97/03/31   9   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O   <10   97020052   97/03/31   O	6	Di-n-Butylphthalate	<b>^100</b>	9702005	ــــ	-	N,				<del>1</del> 0	97020082			NT			İ	<del>10</del>	97020052	97/03/31	0 0	â	$\perp$	
4.6-Dinitro 2-Methylphenol <100 97020051 97/03/31 / NT <10 97020052 97/03/31 0	ŝ	Di-n-Octylphthalate	á8	9702005	┖—	-	N.				÷	97020082			NT			Ì	â	97020052	97/03/31	0	â		
	ŝ	4,6-Dinitro-2-Methylphenol	<b>^100</b>	9702005	Ь-	_	N				<10	97020082	97/03/31		N				<del>2</del> 0	97020052		0	â		

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# DAIA SUNIMARY FORM SEMI-VOLATILE ORGANICS (cont'd) Wastewater Samples

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															2,4,5-1richlorophenol	1,2,4-Ifichiorobenzene	covabilete	Pyrene	rieno	Phenanthrene	Pentachlorophenol	4-Nilrophenol	2-Nitrophenol	Nitrobenzene	N-Nitrosodiphenylamine	N-Nitrosodi-n-Propylamine	Naphihalene	4.4-Methylenedianitine	indeno(1,2,3-c,d)pyrene	Hexachloroethane	Hexachlorocyclopentadiene	Hexachlorobutadiene	Hexachlorobenzene	Fluorene	Fluoranihene	2,4-Dinitrotoluene	2.6-Dinitrotoluene	2.4-Dinitrophenol	Compound		Tracking Numbers CN970244 & GN970244	Sample Nurhbers 97020051; 59, 68, 75, 103-106;	Cara Collected 97/03/20
				1											â	Ŷ100	ABSENT	<u>^</u>	\$100	<u>^1</u> 8	<u>^18</u>	<b>^100</b>	<b>100</b>	<b>100</b>	<u>^1</u> 8	<u> </u>	<u>^18</u>	3 8	Ŷ	<u>^1</u> 8	<b>^100</b>	<b>1</b> 8	<b>1</b> 00	2	8	8	3 8	100	B	SITE 15	s CN97024	s 97020051	חאונטווט
															97020051	97020051	97020051	97020051	97020051	97020051	97020051	97020051	97020051	97020051	97020051	97020051	97020051	15002076	97020051	97020051	97020051	97020051	97020051	97020051	97020051	97020051	07030054	NUMBER	0.5		4 & GN9702	59, 68, 75	
															97/03/31	97/03/31	97/03/31	97/03/31	97/03/31	97/03/31	97/03/31	97/03/31	97/03/31	97/03/31	97/03/31	97/03/31	97/03/31	97/03/31	97/03/31	97/03/31	97/03/31	97/03/31	97/03/31	97/03/31	97/03/31	07/03/34	10/0/1				44	103-106	
															-	-	9.	-	-	-	-	-		-	_ :		- -	-	-	-	-	-	1	- -	1	- -	-	٥		(0)	_	10	
						1							-		N	NT	SEE EPA N	NT N	Z	Z	NT	N	N	Z	¥ :	2	7 7	N N	Z,	Z,	NT	<b>3</b>	Z :	T	2	2 2	1 2	Ē		SITE 16	CN970252	37020064;	97/03/26
-																	SEE EPA METHOD608					-					1											NUMBER [			CN970252 & GN970252	97020064; 80; 135-137;	
						1	-			-	1		-									_	+	-	+	+	-	<u> </u>		-	1	+	1	 	1	-		Date Q	_				
					-	-									έö	á	ABSENT	10	ક	<del>10</del>	â	3	â	â	à	â	á	â	<b>^10</b>	â	â	à	à	â	â	â	â	Result		SITE 18	CN97025	9702008	97/03/26
		T									Ì				97020082		-	97020082	97020082	97020082	97020082	97020082	2000000	20002016	28002076	97020082	97020082	97020082	97020082	97020082	97020082	07020002	28002078	97020082	97020082	97020082	97020082	NUMBER	Se.		CN970257 & GN970257	97020081; 82; 83; 176-181	
											1												07/03/31					12 97/03/31			2 97/03/31				2 97/03/31	2 97/03/31	12 97/03/31	R Date	-	100	)257	76-181	
				i								İ					•	Ī		Ī	i	i	Ť	+	Ť	$\vdash$	İ			$\dagger$	Ť	†	$\dagger$		<del> </del>			۵					
															N	N.	m	NT.	NT	NT .	X   :	2 2	2	2	N T	NT	NT	NT	NT.	Z,	Z	2	N	H	F	T	IN	Result		SITE 19	GN970250	- 13	97/03/26
				i													EPA METHODEOR													-								NUMBER	90		201020102	20182	
				-						-				1	+		-	-	+	<u> </u>		-								-		_						R Date	-				
T			+	Ť	-		1	Ť	+	$\dagger$	$\dagger$			$\dagger$	$\dagger$	†	Ť	1	Ť	$^{+}$	Ť	-	<u> </u>					+	$\dagger$	$\frac{\perp}{\parallel}$	-	$\vdash$					1	۵	-				
														á	2	NO OF N	ADCENT	2	3 6	3 3	200	â	10	6	<b>10</b>	6	10	â	2 2	6	â	â	<b>10</b>	<b>^10</b>	â	10	áo	Result	I VAVA TAN	CN97024	8720052	97/03/20	97/17/20
														70007016	2000000	20002018	2002000	2000005	200000	97020052	9/020052	97020052	97020052	97020052	97020052	97020052	97020052	97020052	200000 Z	9/020052	97020052	97020052	97020052	97020052	97020052	97020052	97020052	NUMBER	!	CN970245 & GN970245	9/20052; 60; 69; 76; 107-113;		
							+							18/80//8							!			97/03/31				97/03/31		_!	1		1			_ !	<u>.</u>	R Date	-	245	107-113;		
+		-	+			+	+	$\dagger$	$\dagger$	+		+	+	9	+	9,9	.0	+-	-	<del></del>	÷	60	-	-	-	0 0	<del>-</del>	+	1	0	-	-	-	+	-+	0 6	-1-		-				
							T							â					â			<del>10</del>				8	â	â		<u> </u>	10	â					_	Result	EFF WWTP	CN97024	9702005	97/03/26	
														97020053	97020053	┿	97020053	97020053	97020053	97020053	97020053	97020053	97020053	97020053	97020053	97020053	97020053	9/020053	97020053	97020053	97020053	97020053	97020053	97020053	97020053	97020053	0700000	N OE	1	CN970246 & GN970246	97020053; 61; 70; 77; 114-120		
, 1	+-	+	<del> </del> -		+	1	-	1	$\vdash$			-	+	3 97/03/31	3 97/03/31	-	3 97/03/31	3 97/03/31	3 97/03/31	3 97/03/31	3 97/03/31	3 97/03/31			3 97/03/31	07/03/31				3 97/03/31				97/03/34					-	246	7; 114-1		
												-		33	33		33	3	5	3	ន	ង	ភ្ន	3	3 3	រី ដែ	3   5	្សន	3	ន	3	3	ន្ទុន្ត្រ	3   5	3 8	3 6	5	+	1		8		

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# DATA SUMMARY FORM METALS Wastewater Samples (mg/L)

	Barcolled balanta	20100150			5	95/12/126			20,000			ľ	201001				20000		-			220000	
tethod	Sample Numbers 97020051; 59; 68; 75; 103-106;	97020051:	59, 68, 75, 1	03-106	9 9	020064 8	97020064; 80; 135-137;		9702008	97020081; 82; 83; 176-181	76-181		97	97020182		9 9	720052: 60	9720052: 60: 69: 76: 107-113:	7.113	9702005	97020053: 61: 70: 77: 114-120	7: 114-120	
etection	Tracking Numbers CN970244 & GN970244	CN970244	& GN97024	4	0	V970252 &	CN970252 & GN970252	2	CN9702	CN970257 & GN970257	0257		GN970259			0	N970245	CN970245 & GN970245	·	CN9702	CN970246 & GN970246	)246	
in in		SITE 15			S	SITE 16			SITE 18				SITE 19			=	INF WWTP			EFF WWTP	ďΡ		
mg/L)	Compound	Result	NUMBER	Date	۵ R	Result	NUMBER	Date	QResult	NUMBER	ER Date	٥	Result	NUMBER	D	۵ 20	Result	OE	Date	Result	NUMBER	ER Date	۵
	Group F																ı						
<0.030		2.04	97020059	97/04/03	_	1.84 97	97020064 97	97/04/03	1.97	97020081	97/04/03	ಜ	N.			0	0.903	97020060	97/04/03	0.180	97020061	61 97/04/03	3
<b>^</b> 0.003	Anlimony	<0.003	97020059	97/04/03	0	0.005 97		97/04/03	0.365	97020081		ឩ	Ŋ			<u> </u>			97/04/03	<b>6</b> .003	9702000	97020061 97/04/03	ω
<b>\$0.005</b>	Arsenic	<0.005	97020059	97/04/03	0	0.005 97	97020064 97	97/04/03	0.217	97020081		ន	N				<b>&lt;</b> 0.005	97020060	97/04/03	<b>^0.005</b>	970200	97020061 97/04/03	<b>ω</b>
<b>&lt;</b> 0.050	Barium	0.077	97020059	97/04/03	0	0.161 97		97/04/03	<0.025	97020081	97/04/03	23	N				0.057	97020060	97/04/03	0.027	970200	97020061 97/04/03	ω
<b>6</b> 0001	Beryllium	0.0028	97020059	97/04/03	0	0.0008 97		97/04/03	0.028	97020081		ន	N				8		97/04/03	<0.0005	-	97020061 97/04/03	ω
<0.05	Boron	I			-	T			N				N.T					,	_	Z,	!		-
<b>&lt;</b> 0.001	Cadmium	0.009	97020059	97/04/03	0	0.006 97	97020064 9	97/04/03	0.027	97020081	81 97/04/03	ន	NT				ô.001	97020060	97/04/03	ô.001	97020061	)61 97/04/03	ω
4	Calcium	NT				N	l i		N		!		깈				$\perp$			S.			-
<0.01	Chromium	0.016	97020059	97/04/03		<0.005 97	97020064 9	97/04/03	0.2	97020081	81 97/04/03	<u>ය</u>	N				\$00.0	97020060	97/04/03	<0.005	97020061	061 97/04/03	۵
<0.05	Cobatt	<0.025	97020059	97/04/03		<0.025 97	97020064 9	97/04/03	0.269	97020081	81 97/04/03	23	N					97020060	97/04/03	<0.025			ũ
<b>&lt;0.02</b>	Copper	0.116	97020059	97/04/03		0.022 97	97020064 9	97/04/03	0.109	97020081	81 97/04/03	2	Z				0.03		97/04/03	<0.010			ದ
<b>6</b> 0.03	Iron	35.4	97020059	97/04/03		3.4 97	97020064 9	97/04/03	1.4	97020081	81 97/04/03	8	Z				0.76		97/04/03	0.207	970200		చ
<0.02	Lead	0.012	97020059	97/04/03		0.007 97	97020064 9	97/04/03	0.381	97020081	81 97/04/03	8	Z				0.004	97020060	97/04/03	0.002	970200	97020061 97/04/03	ಭ
۵	Magnesium	N				NT			NT			_	N				N			N			
<0.03	Manganese	NT				!			N <sub>1</sub>		1	<u> </u>	N				NT			N.T			-
<b>\$0.0002</b>	Mercury	<0.0002	97020059	97/04/03		0.0004	97020064	97/04/03	0.0019	97020081	1	3	N				0.0003	97020060	97/04/03	0.0004	97020061	061 97/04/03	ಜ
<b>60.03</b>	Molybdenum	<b>^0.030</b>	97020059	97/04/03	Ĺ			97/04/03	<0.030	_	4	23	3				<b>&lt;</b> 0.030	97020060	97/04/03	<0.030	97020061	061 97/04/03	ដ 
<b>*</b> 0.03	Nickel	1.6/	65007078	97/04/03	Ī	0.025	9/020064	9//04/03	0.17	97020081	97/04/03	03	Z				<0.010	97020060	97/04/03	<0.010	97020061	061 97/04/03	ಜ
2	Potassium	N	2				<u> </u>	- 1						-	-	Ĺ	N		i	. i	<u> </u>		
2	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2 6	0,02000		٤			1	0.190	<u> </u>	<u> </u>	2			-	i	10,000	97020000	SO/104/03	0,000	!	8/02001 8/04/03	a
600	SIVER	2007	8007076	50/60/16	Ī	C00.05	9/020064	97/04/03	<b>^</b> 0.005	18002078	9//04/03	1/03	2			İ	<0.005	97020060	97/04/03	<0.005	97020061	061 97/04/03	3
	Committee			201000		3	1	200	2	+	200	3			-	İ				2 2			-
6.14	Thelling	200	07020050	07/04/03	:	200	200001 07/04/03	- 1_				3   8	1			1	0.019			0.297	4	07/04/03	3   8
600	Tilanim	\$0.035	9702005	97/04/03				1	2000		07020091 070000	3 8	2			1	200	0200000	201000	0.00		001 970403	3   8
<b>^</b> 0.05	Vanadium	Z			i	- +			Z,	!		-	Z,			i	N .	1		Z	<u> </u>		
<0.05	Zinc	1.41	97020059	97/04/03		0.07	97020064	97/04/03	1.08	97020081	081 97/04/03	8	Z			1	0.09	97020060 97/04/03	97/04/03	0.035	97020061	061 97/04/03	<u>ස</u>
	8016 MOD(AFFF)				İ						1	_				$\dashv$							-
<0.10 mg/L	2(2-E	22	97020068	8 97/04/04		NT			N.T				TN				ô.1	97020069	97/04/02	ô.1	97020070	070 97/04/04	2
																$\top$							
	Selenium (Low Recoveries)	4.5%	97020059	97/04/03	-	46%	97020064	97/04/03	73.8%	% 97020081	<u> </u>	97/04/03	Z,				35.1%	97020060	97/04/03	49.9%	97020061	061 97/04/03	ŝ
:	Thallium(Low Recovery)	27%	97020059	97/04/03		57%	97020064	97/04/03													1 1		Н
		-		-	Ť						-	-				+						-	+
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#### DATA SUMMARY FORM Wastowater Samples COMMENTS

page 1 of 1

< - Signifies none detected and the detection limits

λBS Š : SEE COMMENT.

: Absent

Comment Code

HOLD TIME EXCEEDED.

RECOVERY OF BROMOFORM WAS BELOW ACCEPTABLE LIMITS IN THE LABORATORY FORTIFIED BLANK

OTHER FUEL HYDROCARBONS ARE PRESENT.

SAMPLE SPIKE RECOVERIES ARE LOW DUE TO ORGANIC OR ALKALINE COMPOSITION FOR SELENIUM AND/OR THALLIUM.

All pesticides (EPA METHOD 625) were absent qualitatively.

Comments for OEHD Sample #: 97020051 VERY HEAVY EMULSION. RESULTS BASED ON A 1:10 DILUTION OF SAMPLE. SAMPLE CONTAINED EXTREMELY HIGH QUANTITY OF 2(2-BUTOXY ETHANOL) ETHANOL AND LARGE AMOUNTS OF 2-BUTOXY ETHANOL, 1-OCTANOL, 1-DECANOL,AND DODECANOL,

Comments for OEHD Sample #: 97020052 HEAVY EMULSION. SAMPLE CONTAINED MODERATE AMOUNTS OF LINALYL PROPANOATE AND VARIOUS ORGANIC FATTY ACIDS

Comments for OEHD Sample #: 97020075 1,2-DICHLOROETHENE TENTATIVELY IDENTIFIED AT 13.2 UG/L

Comments for OEHD Sample #: 97020077 TENTATIVELY IDENTIFIED ACETONE AT 40.5 UG/L. ALSO IDENTIFIED CHLOROFORM AT APPROXIMATELY 2.1 UG/L AND TRICHLOROETHENE AT 4.2 UG/L.

Comments for OEHD Sample #: 97020083 IDENTIFIED 1,1,1-TRICHLOROETHANE AT APPROXIMATELY 4.8 UG/L, BENZENE AT 4.8 UG/L, 1.2-DICHLOROPROPANE AT 4.7 UG/L, ETHYLBENZENE AT 3.0 UG/L AND 1,4-DICHLOROBENZENE AT 4.8 UG/L.

Comments for OEHD Sample #: 97020182 RESULTS ARE FOR OIL AND GREASE 38 mg/bottle AND TOTAL PETROLEUM HYDROCARBONS 36 mg/bottle.

Chief, Environmental Chemistry Branch

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# ARMSTRONG LABORATORY

Occupational & Environmental Health Directorate/OEA 2402 E. Drive, Bldg 140 Brooks AFB, Texas 78235-5114 (210) 536-3626, FAX (210) 536-9043 WHITEMAN PROJECT 17

### WHITEMAN PROJECT 17 DATA SUMMARY FORM INORGANIC

INORGANIC
Wastewater Samples
(mg/L)

Compound   Result   NUMBER   Dale   OR   STEE 16   OR   OR   OR   OR   OR   OR   OR   O	Method	Date Collected 97/3327: 2 Sample Numbers 97020317, 350-54; 359; 367;	3703037	7,380-54; 3	59; 367;		97/03/27 97020318; 3	97/03/27 97/02/0318; 355; 360; 368; 374-79; 385;	174-79; 385;		19	(mg/L)								
Compound   Result   NUMBER   Date   Q   Result   NUMBER   Date   NUMBER   Date   Q   Result   NUMBER   Date   NUMBER   Date   NUMBER   Date   Date   NUMBER   Date   NUMBER   Date   NUMBER   Date   Date   NUMBER   Date   NUMBER   Date   NUMBER   Date   Date   NUMBER   Date   NUMBER   Date   NUMBER   Date   NUMBER   Date   NUMBER   Date   Date   NUMBER   Date   NUMBER   Date   NUMBER   Date   NUMBER   Date   NUMBER   Date   Date   NUMBER   Date   Date   Date   NUMBER   Date   NUMBER   Date   Date   NUMBER   Date   NUMBER   Date   NUMBER   Date   NUMBER   Date   NUMBER   Date   NUMBER   Date   NUMBER   Date   NUMBER   Date   NUMBER   Date   NUMBER   Date   NUMBER   Date   NUMBER   Date   NUMBER   Date   NUMBER   Date   NUMBER   Date   NUMBER   Date   NUMBER   Date   NUMBER   Date   NUMBER	Limit	Tracking Number	SITE 15	3 & GN970	263		CN970264 &	GN970264												
COD   A   COD   Code		Composition		OE		- 1		œ		_	_	0	m	m	<u> </u>	OE				OE
Croup A   Color   Co				1.00000	Г		Vesuit	NUMBER	Date	_	⊢	ΙĒ	MBER Da	NUMBER Date Q		Q Result NUMBER	Q Result NUMBER Date	Q Result NUMBER	Q Result NUMBER Date Q Result	Q Result NUMBER Date Q Result No
		Group A								I		1	ŀ	ı	ŀ					
Total Organic Carbon   20.6   97020350   97104/07   121.2   97020355   97104/07   121.2   97020355   97104/07   121.2   97020355   97104/08   121.2   97020355   97104/08   121.2   97020375   97104/08   121.2   97020375   97104/08   121.2   97020375   97104/08   121.2   97020375   97104/08   121.2   97020375   97104/08   121.2   97020375   97104/08   121.2   97020375   97104/08   121.2   97020375   97104/08   121.2   97020376   97104/04   1.3   97104/04   1.3   97104/04   1.3   97104/04   1.3   97104/04   1.3   97104/04   1.3   97104/04   1.3   97104/04	â	COD	1700	97020350	97/04/07		10	- 1	97/04/07	Z	1		$\dashv$		NT I	INT	NT I			
NT   1,752   97020375   9710408   1,76   97020375   9710408   1,76   97020375   9710408   1,76   97020375   9710408   1,76   97020375   9710408   1,76   97020375   9710408   1,76   97020375   9710408   1,76   97020375   9710408   1,76   97020375   9710408   1,76   97020376   9710408   1,76   97020376   9710404   1,76   9710404   1,76	4	Total Organic Carbon	20.6	97020350	97/04/07		121.2		97/04/07	z	1		1		NT	NT I	T	27		
Obl. & Creeses         NT         NT         7.52         97020375         9704008           TPH         NT         NT         1.76         97020375         9704008           Ammonia         A.35         97020351         970404         1.76         97020376         970404           Kijedah Nilrogen         4.8         97020351         970404         1.3         97020376         970404           Nilrade-Nilrine         4.8         97020351         970404         0.14         97020376         970404           Phosphrus, Tolal         0.59         97020351         970404         0.23         97020376         970404           Phosphrus, Tolal         0.59         97020351         970404         0.23         97020376         970404           Phosphrus, Tolal         NT         97020351         9704040         0.23         97020376         9704044           Phosphrus, Tolal         NT         NT         NT         NT         NT         NT         NT           Solidity, Tolal         NT         NT         NT         NT         NT         NT         NT           Phonoide         NT         NT         NT         NT         NT         NT         NT <td></td> <td>Group B</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>- 1</td> <td></td> <td></td> <td>1</td> <td>1</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>		Group B						- 1			1	1								
TPH   NT	<b>60.3</b>	Oil & Grease	N				7.52	- 1	97/04/08	Z	<b>-</b>	1	_		INT	INT	TIN			
Animonia   A35   97020351   97104004   0.4   97020376   97104104   0.4   0.4   0.4   0.7020376   97104104   0.7	4	TPH	N				1.76		97/04/08	z	1				NT	Z	Z			
Ammonia         A.35         97020351         9704040         0.4         97020376         9704040           Kjeldahl Nilrogen         24         97020351         97020351         9704040         1.3         97020376         9704040           Miralek-Nilrine         4.8         97020351         9704040         0.8         97020376         9704040           Phosphorus, Total         0.69         97020351         9704040         0.23         97020376         9704040           Phanols         53         97020352         970403         410         97020378         9704091           Phanols         53         97020353         970403         410         97020378         9704091           Phanols         NT         37020353         970403         410         97020378         9704091           Phanols         NT         NT         NT         NT         NT         NT           Acidity, Total         NT         NT         NT         NT         NT         NT           Langlier Index         NT         NT         NT         NT         NT         NT         NT           Residue, Volatilio         NT         97020354         970401         NT         NT <td></td> <td>Group C</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>-</td> <td></td> <td>- !</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>		Group C								-		- !								
Kislidahn Nitrogen         24         97020351         97020351         97020376         97020377         97020376         97020377         97020377         97020377         97020377         97020377         97020377         97020377         97020377         97020377         97020378         97020378         97020378         97020378         97020378         97020378         97020378         97020378         97020378         97020379         97020379         97020379         97020379         97020379         97020379         97020379         97020379         97020379	<b>60.2</b>	i	4.35	97020351			0.4	- 1	97/04/04	Z	1	7								
Nitrales-Nitrite         4.8         97020351         9704004         0.8         97020376         9704004           Phosphate, Ortho         0.39         97020351         9704004         0.14         97020376         9704004           Phosphorus, Total         0.099         97020352         9704001         <0.005		Kjeldahl Nilrogen	24	97020351			1.3		97/04/04	2	1				NT I	NT	NT			
Phosphate, Ortho         0.39         97020351         9704004         0.14         97020378         9704004           Phosphorus, Total         0.69         97020351         9704001         0.23         97020378         9704004           Cyanide, Total         40.005         97020352         970403         <10	6.1	Nitrate+Nitrite	4.8	97020351			0.8	97020376	97/04/04	21:	1	T			N 2	27	27			
Phosphorus, Tolal   0.69   97020351   97/04/04   0.23   97020376   97/04/04	ô.1	Phosphate, Ortho	0.39	97020351	97/04/04		0.14		97/04/04	z i	7	$\neg$			NT 2	27	27	NT -		
Group D           Cyanide, Total         <0.005         97020352         97/04/01         <0.005         97020378         97/04/03         P7/	¢0.10	Phosphorus, Total	0.69	97020351	97/04/04		0.23		97/04/04	2 :	7	$\top$			21	NT I	NT I			
Cyanide, Total   -0.005   97020352   97/04/01   -0.005   97020377   97/04/01   97/04/03   -10   97/02/378   97/04/03   -10   97/02/378   97/04/03   -10   97/02/378   97/04/03   -10   97/02/378   97/04/03   -10   97/02/378   97/04/03   -10   97/02/378   97/04/03   -10   97/02/378   97/04/01   97/02/378   97/04/01   97/02/379   97/04/01   97/04/01   97/02/379   97/04/01   97/04/01   97/02/379   97/04/01   97/02/379   97/04/01   97/04/01   97/02/379   97/04/01   97/02/379   97/04/01   97/04/01   97/02/379   97/04/01   97/04/01   97/04/01   97/02/379   97/04/01   97/04/01   97/02/379   97/04/01   97/04/01   97/04/01   97/04/01   97/04/01   97/04/01   97/04/01		Group D				Ī				Ļ	ľ	i				2		N N		
Group E         53         97020353         97/04/03         <10         97020378         97/04/03           Acidity, Total         NT	<b>&lt;</b> 0.005	Cyanide, Total	<0.005	97020352	97/04/01	П	<0.005	97020377	97/04/01	Z	7	- 1			NT	NT	NT	NT		
Phenois		Group							į											
Group G         NT <t< td=""><td>&lt;10 ug/L</td><td>Phenois</td><td>53</td><td>97020353</td><td>97/04/03</td><td></td><td><b>10</b></td><td>97020378</td><td>97/04/03</td><td>Z</td><td>-</td><td></td><td>_</td><td></td><td>NT</td><td>INT</td><td>NT</td><td>NT</td><td></td><td></td></t<>	<10 ug/L	Phenois	53	97020353	97/04/03		<b>10</b>	97020378	97/04/03	Z	-		_		NT	INT	NT	NT		
Acidity, Total         NT		Group G	!									- 1								
Alkalinity, Total         NT		Acidity, Total	N.				NT			Z	1	i	_		TN	TN				
Bromide		Alkalinity, Total	Z				NT			Z	7	- 1	-		Z,	Z	N.T	NT N		
Chloride         979         97020354         97/04/01         29.8         97020379         97/04/01           Color         NT		Bromide	Z				NT			2	1	- !			NT :	NT I	NT			
Color         NT	4	Chloride	9.79	97020354	97/04/01		29.8	97020379	97/04/01	z	7	- [			NT	NT I	L			
Langlier Index         NT	units	Color	Z				NT			Z	1	- 1	1		N,	NT .	NT	NT		
Residue, Ioral         NT         249         97020379         9704001         B           Residue, Nonliterable         32         97020384         97/04001         28         97020379         9704001         NT           Residue, Volalite         NT         NT         NT         NT         NT         NT         NT         NT         NT         NT         NT         NT         NT         NT         NT         NT         NT         NT         97020354         97/04/01         A         462         97020379         97/04/01         A         97020379         97/04/01         A         97020379         97/04/01         A         97/02/0379         97/04/01         A         97/02/0379         97/04/01         A         97/02/0379         97/04/01         A         97/02/0379         97/04/01         A         97/04/01         A         97/04/01         A         97/04/01		Langlier Index	Z,		•		NT			2	1	- 1			N.T	NT	NT			
Residue, Fillerable   1037   97020354   97/04/01   249   97020379   97/04/01   27/04/01   28   97/02/079   97/04/01   38   97/02/079   97/04/01   38   97/02/079   97/04/01   38   97/02/079   97/04/01   38   97/02/079   97/04/01   38   97/02/079   97/04/01   38   97/02/079   97/04/01   38   97/02/079   97/04/01   38   97/02/079   97/04/01   38   97/02/079   97/04/01   38   97/02/079   97/04/01   38   97/02/079   97/04/01	602 ml /		3 2	200025			TN	i		12	-	Ι.			TN	NT	NT			
Residua   Volatile   NT   97020354   9704/01   249   97020379   9704/01   28   97020379   9704/01   28   97020379   9704/01   28   97020379   9704/01   28   97020379   9704/01   28   97020379   9704/01   28   97020379   9704/01   29   97020379   9704/01   20   20   20   20   20   20   20	2	<u> </u>	103	8702035		80	0.4		97/04/01	,	-	1			NT	ZT	NT			
Residua_Volatile	2 .	Residue Monfilleranto	3 5	0702035		T	249		97/04/01	z	7	Ĺ			T	NT	NT			
Silica         NT         997         97020354         97/04/01         a         462         97020379         9704/01         a           Sulfiales         204.4         97020354         97/04/01         53.5         1         97020379         97/04/01         a           Sulfides         NT         97020354         97/04/01         -0.1         97020365         97/04/08         a           Surfactionis         330.05         97020354         97/04/01         -0.1         97020379         97/04/01         a           Turbidity         NT         NT         NT         97020379         97/04/01         97/04/01         97/020379         97/04/01         97/04/01	<u> </u>	Residue Volatile	32	9/020354			28	:	97/04/01	Z	-	1			NT	NT	NT			
Specific Conductance         997         97020354         97104/01         a 462         97020379         9704/01         a 62           Sulfales         204.4         97020354         97104/01         53.5         1         97020379         9704/01         9704/01         97020379         9704/01         97020379         9704/01         97020379         9704/08         a           Surfactenis         330.05         97020354         97/04/01         -0.1         97020379         97/04/01         a           Turbidity         NT         NT         NT         97020379         97/04/01         97/04/01           Volatile Suspended Solids         29         97020354         97/04/01         10         97020379         97/04/01		Silica	<u> </u>				Z			Z	T	1			NT	NT				
Sulfales         204.4         97020354         97/04/01         53.5         1         97020379         97/04/01         8           Sulfides         NT         40.1         40.1         97020355         97/04/08         97/04/08         97/04/09 <td>umhos</td> <td>Specific Conductance</td> <td>997</td> <td>97020354</td> <td>97/04/01</td> <td>ď</td> <td>460</td> <td>07020270</td> <td>070404</td> <td></td> <td>-</td> <td>1</td> <td></td> <td></td> <td>N.T</td> <td>NT</td> <td></td> <td></td> <td></td> <td></td>	umhos	Specific Conductance	997	97020354	97/04/01	ď	460	07020270	070404		-	1			N.T	NT				
Sulfides         NT         40.1         97020354         97020354         9704001         40.1         97020379         9704001         6           Surfactents         330.0*         97020354         9704001         40.1         97020379         9704001         97020379         9704001         97020379         9704001         NT         NT         NT         97020379         9704001         97020379         9704001         97020379         9704001         97020379         9704001         97020379         9704001         97020379         9704001         97020379         9704001         97020379         9704001         97020379         9704001         97020379         9704001         97020379         9704001         97020379         9704001         97020379         9704001         97020379         9704001         97020379         9704001         97020379         9704001         97020379         9704001         97020379         9704001         97020379         9704001         97020379         97020379         97020379         97020379         97020379         97020379         97020379         97020379         97020379         97020379         97020379         97020379         97020379         97020379         97020379         97020379         97020379         97020379	4	Sulfales	204.4	97020354	97/04/01	-	53.5	97020379	97/04/04		1	-1			2	2	Z			
Surfaction is         330.0 v         97020354         97/04/01         <0.1         97020379         97/04/01           Turbidity         NT         NT         NT         NT         97/04/01 <td< td=""><td>ô</td><td>Suffides</td><td>Z</td><td></td><td></td><td>1</td><td>6</td><td>97020385</td><td>97/04/08</td><td>!</td><td>-</td><td>- 1</td><td></td><td></td><td>2</td><td>2</td><td>2</td><td></td><td></td><td></td></td<>	ô	Suffides	Z			1	6	97020385	97/04/08	!	-	- 1			2	2	2			
Turbidity         NT         NT         NT         NT         97020354         97/04/01         10         97020379         97/04/01	60.1	Surfactants	330.0*	9702035	97/04/01		ô.	97020379	97/04/01	!_	7	- 1			27	X 2	2 2			
Volatile Suspended Solids 29 97020354 97/04/01 10 97020379 97/04/01	units	Turbidity	NT				Z,			2	7	- 1			T.	NT	NT			
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# UA I A SUMMARY FORM VOLATILE ORGANICS Wastewater Samples ('ug/L')

							6	250	<b>650</b>	650	\$5	\$50	\$50	<b>\$</b> 5.0	ŝ	<b>\$5.0</b>	<b>^</b> 5.0	<b>&lt;</b> 5.0	<5.0	\$.0	\$0		À (6	2	60	<u>\$</u> .0	<b>\$</b> 5.0	<b>\$</b> .0	<b>\$5.0</b>	<5.0	<5.0	<5.0	<b>\$5.0</b>	<b>*5.0</b>	<b>&lt;5.0</b>	1	1_	L		<u> </u>		1	(ug/L)	Limit	Detection	Method	
							any Chicke	Vinul Ohlorida	n. Xvlene	m-Yulana & n-Yulana	Trichloroffouromethane	Trichloroethane	1 1 2-Trichloroethane	1.1.1-Trichloroethane	Toluene	Teirachloroethene	1,1,2,2-Tetrachloroethane	Methylene Chloride	Ethylbenzene	trans-1,3-Dichtoropropene	cis-1,3-Dichloropropene	1,2-Didiloropropane	1 3 Dichloroppoor	Constanting Control	1 1-Dichloroathana	1,2-Dichloroethane	1,1-Dichloroethane	1,4-Dichlorobenzene	1,3-Dichlorobenzene	1,2-Dichtorobenzene	Dibromochloromethane	Chloromethane	Chloroform	2-Chloroethylvinylether	Chloroethane	Chlorobenzene	Carbon Tetrachloride	Bromomethane	Bromoform	Bromodichloromethane	Benzene	EPA 624 OR 601/602			Tracking Numbers CN970263 & GN970263	Sample Numbers 97020317; 350-54; 359; 367;	Care Collected at 103/2/
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							11507016	11502016	97020317 97/04/01	11002016	100000	07000047	07000047	97020317	71505076	97020317	97020317	97020317	97020317	97020317	97020317	97020317	J1020317	11 5020 15	07020347	97020317	97020317	97020317	97020317 97/04/01	97020317	97020317	97020317	97020317	97020317	97020317	97020317	97020317	97020317	97020317 97/04/01	97020317 97/04/01	97020317		NUMBER	2	3 & GN970	7; 350-54; 3	
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							97020318	97020318	97020318	97020318	9/020318	9/020318	91020318	9102010	07030340	07020249	07020349	97020318	97020318	97020318	97020318	97020318	97020318	97020318	97020318	01507016	07020249	97020318	97020318	97020318	97020318	97020318	97020318	97020318	97020318	97020318	97020318	97020318	97020318	97020318	97020318		NUMBER		GN970264	97020318; 355; 360; 368; 374-79; 385;	
							97/04/01	97/04/01	97/04/01	97/04/01	9//04/01	97/04/01	9//04/01	97709701	01/04/01	07040	07/04/04	97/04/01	97/04/01	97/04/01	97/04/01	97/04/01	97/04/01	97/04/01	97/04/01	10/104/01	9	97/04/01	97/04/01	97/04/01	97/04/01	97/04/01	97/04/01	97/04/01	97/04/01	97/04/01	97/04/01	97/04/01	97/04/01	97/04/01	97/04/01		Date			374-79; 385;	
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Method Detection

Date Collected 97/03/27
Sample Numbers 97020317; 350-54; 359; 367;
Tracking Numbers CN970263 & GN970263

97/03/27 97/02/0318; 355; 360; 388; 374-78; 385; CN97/0264 & GN97/0264 SITE 16

SITE 15

(Lg/L) Limit

### DATA SUMMARY FORM SEMI-VOLATILE ORGANICS

Wastewater Samples

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4,6-Dinitro-2-Methylphenol	Distribution	Dia Odylabibalata	Di-n-Butylphthalate	Dimethylphthalate	2,4-Dimethylphenol	Diethylphthatate	2,4-Dichlorophenol	a,a-Dictionopenzione	2 2 District Contract	1 4-Dicklorobeorene	1,3-Dichlorobenzene	1,2-Dichtorobenzene	Dibenzo(a,h)anthracene	Dieldrin	4,4.001	2001	4.4-DDE	4,4-DDD	Chrysene	4-chlorophenyl Phenyl Ether	2-chlorophenol	2-chloronaphihalene	T-Ciloro-Salinality Friends	A chlory a math. I Ohanni	Chlordana	Bulyibenzylphthalate	4-Bromophenyl Phenyl Ether	Bis(2-elhylhexyl)phthalate	Bis(2-chloroisopropyl)ether	Bis(2-chloro ethyl)ether	Bis(2-chloro ethoxy)methane	della-BHC	bela-BHC	Benzo(k)Iluoranthene	denzo(g.h.i)perylene	Benzo(b)fluoranihene	Benzo(a)pyrene	Centro(a)animacente	Benzelalania	Donald a	Arocior 1260	Anthropon	Aldrin	Acenachthylene	Acenaphthene	EPA 625	Compound	-
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#### Page 4

# SEMI-VOLATILE ORGANICS (cont'd) . Wastewater Samples (ug/L)

																				ŝ	. 6	<b>^</b>				5	6	\$	5	-6	Ĝ		ô	5	ô		Ĝ	6	ŝ	. 6	à 6	à		ļ	ŝ	-	-		(ug/L)	Cimit	Detection	Patrotton	K e hod
																				2,4,6-Trichlorophenol	6		909		***************************************		nenol					र्व	L			edianiline		3-c,d)pyrene		nladiene			1	0110	-		2 6-Dinitrotoluene		Compound		Tracking Numbers CN970263 & GN970263	Candinal aidinac	Care Collected 97/03/27
																				Z	2	OCE EF	200	2	N :	NT.	3	N	Y	T	T	N	NT	NT	NT	I	N	N	NT	Z	Z	Z	2	-		2 2	2 2	MT	Result	SITE 15	CN9702	507078	9//03/2/
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																				97/04/02	97/04/02	97/04/02	97/04/02	97/04/02	20/60/16	201007	97/04/02	07/04/02	97/04/02	97/04/02	97/04/02	97/04/02	97/04/02	97/04/02	97/04/02	97/04/02	97/04/02	97/04/02	97/04/02	97/04/02	97/04/02	97/04/02	97/04/02	97/04/02	97/04/02	97/04/02	97/04/02					374-79, 385;	
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-																						SEE EPA METHOD608															7					7		_	_	7		Result   NUMBER   Date	!				
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# UAIA SUMMARY FORM METALS Wastewater Samples (mg/L)

-											The second second									l	1		***************************************		
Method	Van Collected 97020317: 350-54: 359-357-	97020317	7: 350-54:	359-367-		97020318- 34	97020318: 355: 360: 368: 374-70: 385:	774-79- 395-	_				+								T				1
Detection	Tracking Numbers CN970263 & GN970263	CN97026	3 & GN970	)263		CN970264 & GN970264	GN970264	3, 000,					+												_i_
Limit	,	SITE 15				SITE 16							+			-	1				İ				i_
(mg/L)	Compound	Result	NUMBER	Date	٥	Result	NUMBER	Date	٥	Result	OE Date		O Result		OE Date		D	NIIMBER OE	P Data	<b>5</b>	8		OE Date		)
	Group F												ŀ	ı.	-			ŀ		į,		- I-		- 1-	- 14
<0.030 A		0.158	97020367	97/04/03		0.903	97020368	97/04/03		N			3			_	N		-	_	3			_	
<0.003 A	-	0.005	97020367	97/04/03		0.004	į	97/04/03		N			깈			_	3		-	+	2		-	$\downarrow$	
<0.005 A	Arsenic	<0.005	97020367	97/04/03		<b>^0.005</b>	97020368	97/04/03		NT			깈			_	3		-	+	3			_	1
L		0.044	97020367			0.094	97020368	97/04/03		N			z			_	3		+	+	Z			_	- 1
-6.001 E	Beryllium	<0.0005	9702036	97020367 97/04/03		<0.0005	97020368	97/04/03		N.			Z			$\perp$	Z,		-	+	폭 :		-	_	- 1
<0.05 E	Boron	NT				NT				NT I			Z		_	_	3		-	+	Z,			_	- 1
¢0,001	Cadmium	0.003	97020367	7 97/04/03	<u>ت</u>	0.002	97020368	97/04/03		Z			Z			_	3		1	+	3			_	- 1
<u>^</u>	Calcium	2				NT				NT			3		-	_	3		1	+	<u> </u>		-		- 1
<b>6.01</b>	Chromium	0.006	9702036	97020367 97/04/03	<u>س</u>	<0.005	97020368	97/04/03		TN			Z.				N N			+	3		-		i
<b>&lt;</b> 0.05	Coball	<0.025	97020367	7 97/04/03	<u>ω</u>	<0.025	97020368	97/04/03		N			Z !				3		<u> </u>	+	Z				- 1
<b>6</b> 0.02	Copper	0.049	97020367	7 97/04/03	3	0.03	97020368	97/04/03		Z,			Z				Z		-	+	Z		-		- 1
<0.03	Iron	2.42	97020367		ω	1.75	97020368	97/04/03		N			Z,				Z		1	$\dashv$	3		-		i
<0.02	Lead	0.004	97020367	7 97/04/03	ω	0.005	97020368	97/04/03		Z		ĺ	Z	·			Z		+	-	Z				- 1
۵	Magnesium	N				Z,				N T			N,				Z		-	+	Z				- 1
	Manganese	Z				Z				N,			N.				핔			$\dashv$	Z				- 1
<0.0002	Mercury	<0.0002	97020367	7 97/04/03	<u> </u>	<0.0002	97020368	97/04/03		NT			Z	•			¥.		-		Z				- 1
L	Molybdenum	<0.030	97020367		<u>د</u>	<0.030	97020368	97/04/03		Z			Z				Z				Z				i
¢0.03	Nickel	0.022	97020367	97/04/03	100	0.016	97020368	97/04/03	İ	N			N,	•			N			_	Z	,			Ī
ł.	Potassium	Z			<u> </u> 	N			-	Z		i	Z				N			<u> </u>	Z	·		ļ	1
1	Selenium	÷0.005	9702036	97020367 97/04/03	Б	<b>\$0.005</b>	97020368	97/04/03	0	3			Z				Z T				Z			İ	1
ô.01	Silver	<b>^0.005</b>	970203	97020367 97/04/03	:	<0.005	97020368	97/04/03	$\vdash$	N,			Ξ.				Z,		_	:	폭:				i
4	Sodium	N			<u>!</u> 	N				N			Z	7			3		<u> </u>	-	Z	-	1		I
<0.14	Strontium	0.404	4 97020367	97/04/03	<u>ت</u>	0.286		97020368 97/04/03		NT			Z			ļ	Z		<u> </u> 	4	Z				T
=	Thallium	ô.001	97020367	57 97/04/03	۵	ô.001	97020368	97/04/03		N	İ		Z,	1		ļ	Z			+	Z				1
<0.21	Titanium	<0.025	970203	97020367 97/04/03	చ	<0.025	97020368	8 97/04/03	_	N			z	7		Ì	N N			+	Z				Т
<0.05	Vanadium	Ä				N				Z			Y,	7	-	1	Z		1	;	Z		-		ī
<b>&lt;</b> 0.05	Zinc	0.077	970203	97020367 97/04/03	3	0.031	97020368	97/04/03	-	Z			3	-	-		3			4	Z				1
	8015 MOD																-	_	1	_	-	_			- 1
<0.10 mg/L	<0.10 mg/L 2(2-Butoxyetoxy)Ethanol	1420	97020359	97/04/08	8	6.1	97020360	97/04/04		Z			Z,	7			Z		_	_	Z	,			_
		!			-				+		Ī		Ė												1 1
			+		+				1				+	_					-	1	+-				
•	Selenium (Low Recoveries)	9.3%	97020367	67 97/04/03	ន	53.3%	97020368	97/04/03			·		_					+	_	4	$\dot{+}$	-			-
:	Thallium(Low Recovery)																		+	4	ᆉ	-			
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TAIA UUIVIIVIAKY TORM COMMENTS

Wastewater Samples page 1 of 1

ABS : Absent Signifies none detected and the detection limits.
 SN : SEE COMMENT.

Comment Code

HOLD TIME EXCEEDED.

SAMPLE SPIKE RECOVERIES ARE LOW DUE TO ORGANIC OR ALKALINE COMPOSITION FOR SELENIUM AND/OR THALLIUM.

All pesticides (EPA METHOD 625) were absent qualitatively.

Comments for OEHD Sample #: 97020374 SAMPLE CONTAINED A SMALL AMOUNT OF JET FUEL TYPE HYDROCARBONS (C12-C18).

Reviewed By:

VICTORIA S. DUNOVANT, LI Col, USAF, BSC

Chief, Environmental Chemistry Branch



# ARMSTRONG LABORATORY

Occupational & Environmental Health Directorate/OEA
2402 E. Drive, Bidg 140
Brooks AFB, Texas 78235-5114
(210) 536-3626, FAX (210) 536-9043
WHITEMAN PROJECT 17
DATA SUMMARY FORM
INORGANIC

Wastewater Samples (mg/L)

NT :	8	20573 97/0		28		97020566	8	4/01	)559 87/0	97020	20			47	Volatile Suspended Solids	
Z	1		_[	Z			¥,		_		Z			=		unit <b>s</b>
NT I				B .	97/04/01	97020566	3.6	4/01 a		97020	0.14			ā		!
Z I				a 1,4	97/04/08	97020567	69.6	4/08 a		97020	0.2			1		
N.	101		9	4	97/04/01	97020566	2802	101		<u> </u>	135.0	!		=		2
NT	4/01	20573 97/0		73	97/04/01	97020566	1142	4/01		1	785	-		ī		umhos
N				Z			Z				N		-	=		!
Ž,				Z,			Z	<u> </u>		-	121			=	ue, Volatile	2
N	10	20573 97/0		33	97/04/01	97020566	17	4/01	٠.	97020	24			=	rable	12
Z	ð	20573 97/0		52	97/04/01	97020566	885	4/01		97020	556	-		7		۵
Z,	701 a	20573 97/0			<u> </u>	97020566	ô2	4/01 a	1	97020	0.4			=	i i	۶
NT				N			Z				N			7		4
NT				N			3		-		N			7		!
2				21			N	_	<u></u>		N.	_				units
NT	3			89	97/04/01	97020566	105.1	101	٠	97020	73.1	<u> </u>		-		2
2				NT			Z,			-	Z					
Z.				NT			Z,				Z			-		
NT				N.			Z				N			-		
															Group G	
N	/03		9702	21	97/04/03	·	35	1/03		970205	21			<u> </u>		<10 ug/L P
												<u> </u> 		<u> </u>	Group E	
Z	707	0571 97/04	1	ô	97/04/07	97020564	<b>^</b> 0.005	1/07	57 97/04	1 1	<0.005					<0.005 C
			į												Group D	
2	90			2.5	97/04/09	97020563	1.1	60/1	56 97/04	970205	2.15	/04/09		<u></u>		<0.10 P
Z	3	0570 97/04		1.6	97/04/09			90		970205	1.3	/04/09		<u> </u>		<u> </u>
Z,	8	0570 97/04	_	â	97/04/09			90		970205	0.1	/04/09				ô.1
Z	9	0570 97/04	j	A	97/04/09			<u>8</u>		970205	3.1	/04/09				<u> </u>
Z	8	0570 97/04	9702	-	97/04/09			90		970205	0.75	/04/09			B	602 A
	_ !			4				j							Group C	
2			9702			97020562	50.4	n 80/		970205	30.3	704/08		<u> `</u>		<u>-</u>
21	8		9702		97/04/08		65.6	80		970205	367	/04/0B				<0.3
	-		.													
Z	9	0568 97/04	- !	108	97/04/07			707	54 97/04/	970205	91.3	04/07				4
Z	9	0568 97/04	_		87/04/07			/07	54 97/04/	970205	E 0000	04/07				<b>10</b>
	-		_												Group A	
	۵_			Q Res	Date	OE NUMBER	Result	• Q		NUMB	Result			_	Compound Re	(mg/L)
Site 10			N	Site			Site 23				Site 22			e 16	Sit	Clmit
GN970275			70274	GNS			GN970273			272	GN970	-		1970271	Tracking Numbers GN	Detection
97020508:		18:568-574	20497:507:5	970;	561-567	196:506:517	97020491:4		516:554-6	90:495:505	970204		15:551-553	020504.5	Sample Numbers 97	Method
97/03/28			3/28	97/0			87/03/28			4	97/03/28			03/26	Date Collected at	
		97/03/28 97/03/28	97/03/28 97/03/28 97/02/05/06 97/02/05/06 97/02/05/06 97/02/05/06 97/02/05/06 97/02/05/06 97/02/05/06 97/02/05/06 97/03/28 97/03/	97/03/28 97/03/28 97/02/05/06 97/02/05/06 97/02/05/06 97/02/05/06 97/02/05/06 97/02/05/06 97/02/05/06 97/02/05/06 97/03/28 97/03/	97/02/A27   97/02/057   97/04/09   NT	1/03/28   97/02/37   97/04/09   NT   NT   NT   NT   NT   NT   NT   N	1/03/28   97/02/37   97/04/09   NT   NT   NT   NT   NT   NT   NT   N	1/103/28   97/02/05/8   97/04/07   NT	1702/261   1803/261	1702/261   1803/261	1702/261   1803/261		STROCOMO   STROCOMO	1700-00-00-00-00-00-00-00-00-00-00-00-00-	10.00   10.0	SPICIOSOS   STOCKAS   ST

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#### WHITEMAN PROJECT 17 Detection Melhod ug/L) 6 **50** 2-Chloroethylvinylether Chlorobenzene Carbon Tetrachloride Benzene trans-1,3-Dichloropropene cis-1,3-Dichloropropene Dibromochloromethane Chloromethane Chloroform Bromomethane Bromodichloromethane trans-1,2-Dichloroethene Chloroethane Vinyl Chloride 1,1,2-Trichloroelhane 1,1,1-Trichloroethane 1,1,2,2-Tetrachloroethane Methylene Chloride Ethylbenzene 1,2-Dichloropropane 1,1-Dichtoroethene 1,2-Dichloroethane 1,1-Dichloroethane 1,4-Dichlorobenzene 1,3-Dichlorobenzene 1,2-Dichlorobenzene Tetrachloroethene richloroethene EPA 624 OR 601/602 Compound Date Collected 97/03/28 Sample Numbers 97/02/05/04:515:551-553 Tracking Numbers GN97/0271 6666666666666 66666666 8 8 8 8 8 8 8 8 Result 97020504 97020504 97/04/02 97020504 97/04/02 97020504 97/04/02 97020504 97/04/02 97020504 97020504 97020504 97020504 97020504 97020504 97/04/02 97020504 NUMBER 97020504 97020504 97020504 97020504 97020504 97020504 97020504 97020504 97020504 97020504 97/04/02 97020504 97020504 97020504 97020504 유 97/04/02 4 97/04/02 4 97/04/02 4 97/04/02 Daile ٥ 2 2 2 3 3 3 5 6 2 6 6 6 6 6 6 6 6 6 Result GN970272 Site 22 97020490:495:505:516:554-560 97/03/28 OE NUMBER 97020505 97020505 97020505 97020505 97020505 97020505 97020505 97020505 97020505 97020505 97020505 97020505 97020505 97020505 97/04/02 Date ٥ Result Site 23 97020491:496:506:517:561-567 GN970273 97/03/28 DATA SUMMARY FORM OE NUMBER 97020506 97020506 97020506 97020506 97020506 **VOLATILE ORGANICS** 97020508 97020506 97020506 97020506 97020506 97020506 97020506 97020506 97020506 97020506 97020506 97020506 97020506 97020506 97020506 Wastewater Samples 97/04/02 ₽å Ф 0 ۵ 97/03/28 97/02/0497:507:518:568-574 GN97/0274 Site 2 Result 3 S 8 3 97020507 97020507 97020507 97020507 97020507 97020507 97020507 97020507 97020507 97020507 97020507 97020507 97020507 97020507 97020507 97020507 97020507 NUMBER 유 97/04/02 Date \_ a ď, 0,0 ٥ 97020508: GN970275 Result Site 10 8 8 8 \$ \$6 \$6 \$6 ક 8 8 8 97/03/28 97020508 97020508 97020508 97020508 97020508 97020508 97020508 97020508 NUMBER 97020508 97020508 97020508 97020508 8 97/04/02 Date ۵ 2 2 2 ۵ 요요. <u>.</u> 000000000000 요 요 d. 2 <u>.</u> <u>ء</u>ِ <u>.a</u> 0000 ٥ 97020581: GN970277 Site ? 33333 ZZ Z Z ZZZZ Result 3 3 3 Z 퐄 ZZ 33 97/03/28 NUMBER 8 Date ۵

# DATA SUMMARY FORM METALS Wastewater Samples (ug/L)

Method Sample	22022			<u> </u>	0.100,10			97/03/25	123		ļ				97/	97/03/25			97/03/25		
	Sample Numbers 9/019/9/; 807; 834-40; 971	97, 007, 034	40, 971	9	7019792	97019792, 798, 804, 808, 841-847	841-847	9/01	1793· 790· A	97019793: 799: 804: 809: 848 854		CZICOLIE									
Detection Tracking	Tracking Numbers CN970228 & GN970228	228 & GN970	228	0	N970229	CN970229 & GN970229		CN97	0230 % GNC	7020	9	201010	CN07031 & C1073310, 855-57	10, 855-57	970	97019801; 858-64	64		97019795	97019795; 806; 811; 865	365
Cimit	Site: 6			S	Site: 7			Site: 10	Site: 10	04.00		Site 12	CN970231 & GN970231	33	CN970	CN970232 & GN970232	N970232		CN970249	CN970249 & GN970249	49
(mg/L) Compound	ld Resuit	NUMBER	Date	0	Result	OF NIMBED	<b>P</b>						30				<u>۾</u>	4	31.6.0	ရှိ	
		-					1	, ingoing	NOMBEK	Late Late	٦	Result	NUMBER	Date	Q Result	ult NUMBER		Date Q	Result	NUMBER	Date
<0.030 Aluminum	0.056	97019797	97/04/03	6	0.205	97019798	97/04/03	200	i	1	1					<u> </u>					
<0.003 Anlimony	<0.003	97019797	- 1	0		- [	97/04/03	2	_	ĺ	3   2	3.47	00861076	97/04/03	0.948	48 97019801		97/04/03	Z		
<0.005 Arsenic	<0.005	97019797		^			27/04/02	0.00	_!_	ı	3   2	0.351	97019800	97/04/03	0.005	05 97019801		97/04/03	Z		
<0.050 Barium	0.038		- 1	0	!	İ	97/04/03	0.00		1	2	0.005	97019800	97/04/03	0.02	2 97019801	<u> </u>	97/04/03	Ŋ		
<0.001 Beryllium	<0.0005		97/04/03	^	56		97/04/03	2 2 2	1	1	$\dagger$	0.379	97019800	97/04/03	0.07	7 97019801	<u> </u>	97/04/03	N		
<0.05 Boron	N	:		Z		0.00	0,000	0.000	66/610/6 C	99 97/04/03	+	0.0013	97019800	97/04/03	0.0	0.0094 97019801		97/04/03	Z		
<0.001 Cadmium	0.003	97019797	97/04/03	0	8 I	97019798	07/04/03	3 3	1	ŧ	  -	Z			N	-			Z,		
	N.	***************************************		Zi		1	-	1 6	SE/BIO/B	89 9//04/03	12	0.891	97019800	97/04/03	0.001	97019801		97/04/03	Z		
<0.01 Chromium	0.034	97019797	97/04/03		3		2	) i 2	1	1	!	NT			N,				Z		
	<0.025			^		-	07/04/03	0.00		!	1 2	0.659	97019800	97/04/03	0.01	97019801		97/04/03	3		
	0.030	:	i	5		97019798	07/04/03	20.020			2	<0.025	97019800	97/04/03	ô	< 0.025 97019801		97/04/03	Z		
<0.03 Iron	0.561	97019797		0			97/04/03	3 2		- 1	3 2	4.21	97019800	97/04/03	0.025	25 97019801	1	97/04/03	Z		
<0.02 Lead	0.006	97019797	Ī				97/04/03	2 5	07010700	ᆚ	3 8	6.09	97019800	97/04/03	18.2	2 97019801	1	97/04/03	Z		
<1 Magnesium	Z			7				Z		910103		TI	00861076	97/04/03	0.006	97019801	i	97/04/03	N		
1	NT			7	N,			Z			$\frac{1}{1}$	NT :					-	<u> </u>	N		
	0.0003	1	1		0.0002	97019798	97/04/03	0.0003	3 97019799	99 97/04/03	8	0.0005	97019800	97/04/03	2 2				2		
·	<0.030	:	97/04/03	:   ^	<0.030		97/04/03	<0.030	· 1	- 1	8	0.276	97019800	97/04/03	5   6			97/04/03	2		
1	0.019	97019797	97/04/03	0	0.011	97019798	97/04/03	0.023		- !	23	0.712	97019800	97/04/03	0.067	_ i `		97/04/03	2	-	
	N	i	1.		NT			목			-	NT			NI	01010001	- 1	97,04703	2		
	<0.005	<u>i</u>	┸	0	<0.005	97019798	97/04/03	<0.005	5 97019799	99 97/04/03	3 P	<b>6</b> 0.005	97019800	97/04/03	ô :	<0.005 97019801		100	3 3		
╝	\$0.005	16/610/8	97/04/03		0.005	97019798	97/04/03	<b>^0.005</b>	5 97019799			0.152	97019800	97/04/03		<u> </u>	_!.	07/04/03	2		
Signatur	2		1	2	NT.			Z				NT			NT S		_!_	1,00	2 2		
-	0.300	1_		.0	1_	!	97/04/03	0.501	97019799	99 97/04/03	ន	0.347	0.347 97019800	97/04/03	0.761	97019801			1		
-	*0.001	<u> </u>	<u> </u>		6.001	97019798	97/04/03	<b>^0.001</b>			8	0.092	97019800	97/04/03	â ii	<u> </u>		97/04/03			
1	<0.025	97019797	97/04/03		<0.025	97019798	97/04/03	<0.025			3	0.079	97019800	97/04/03	00 5		- 1	97/04/03	2		
<u> </u>	NT.			2	Z,			Z,				N.			NT S	01010001		97,04703	2		
VO.US LING	0.067	97019797	97/04/03		0.058 9	97019798	97/04/03	0.046	97019799	99 97/04/03	8	6.5	97019800	97/04/03	2 3	L		3	1 2		
EPA 8015 MOD (AFFF)	(AFFF)									- 1	1		0101000	0,000	0.120	10981078 92		97/04/03	Z		
<0.10 2(2-Butoxyeloxy)Elhanol	anol BIT	97019803		5	60.1	97019804	97/04/02	N.			1	ê.	97019805	97/04/02	Z			<u> </u>	2		
				1															é	0,019000	20/10/16
p . Selenium (low recovery)	overy) 59.7%	6 97019797	97/04/03	1	-			ا پر	<del></del>	200	3										
			i	1				32.2%	<del>-i-</del>	9/019/89 9//04/03	8	36%	97019800	97/04/03							
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### DATA SUMMARY FORM

Wastewater Samples COMMENTS

page 1 of 1

< - Signifies none detected and the detection limits. : SEE COMMENT

ABS : Absent

: No Sample Received

Comment Code

HOLD TIME EXCEEDED.

BROKEN IN TRANSIT (BIT)

All pesticides (EPA METHOD 625) were absent qualitatively.

Comments for OEHD Sample #: 97019791 SAMPLE CONTAINED TRACES OF 4-HYDROXY-4-METHYL PENTANONE AND SILICIC ACID

Comments for OEHD Sample #: 97019792 SAMPLE CONTAINED A SMALL QUANTITY OF FUEL-TYPE HYDROCARBON, MOST LIKELY JET FUEL.

Comments for OEHD Sample #: 97019793 SAMPLE CONTAINED A LARGE AMOUNT OF HYDROCARBONS TYPICAL OF JET FUEL.

Comments for OEHD Sample #: 97019794 SAMPLE CONTAINED LARGE QUANTITIES OF UNKNOW HYDROCARBONS, POSSIBLY WEATHERED MOTOR OIL

Comments for OEHD Sample #: 97019795 SAMPLE WAS BROKEN IN TRANSIT (BIT).

Comments for OEHD Sample #: 97019797 SAMPLE SPIKE RECOVERIES ARE LOW DUE TO ORGANIC OR ALKALINE COMPOSITION FOR SELENIUM 59.7% Comments for OEHD Sample #: 97019799 SAMPLE SPIKE RECOVERIES ARE LOW DUE TO ORGANIC OR ALKALINE COMPOSITION FOR SELENIUM 35.2%

Comments for OEHD Semple #: 97019801 SAMPLE SPIKE RECOVERIES ARE LOW DUE TO ALKALINE COMPOSITION OF SAMPLE FOR SELENIUM 41.3% AND THALLIUM 13% Comments for OEHD Sample #: 97019800 SAMPLE SPIKE RECOVERIES ARE LOW DUE TO ORGANIC OR ALKALINE COMPOSITION FOR SELENIUM 3.6%.

Comments for OEHD Sample #: 97019808 SAMPLE ALSO IDENTIFIED VINYL CHLORIDE AT APPROXIMATELY 2.8 UGIL, 1.1,1-TRICHLOROETHANE AT 1.4 UGIL, TOLUENE AT 1.7 UGIL AND ETHYLBENZENE AT 2.5 UG/L. OTHER FUEL HYDROCARBONS ARE PRESENT.

Comments for OEHD Sample #: 97019809 SAMPLE REQUIRED DILUTION FOR SAMPLE ANALYSIS, RESULTS HAVE BEEN ADJUSTED. OTHER FUEL HYDROCARBONS ARE PRESENT

0.3 Comments for OEHD Sample #: 97019810 ALSO IDENTIFIED M AND/OR P XYLENE AT APPROXIMATELY 2.20 UG/L. OTHER FUEL HYDROCARBONS ARE PRESENT

SAMPLE SPIKE RECOVERIES ARE LOW DUE TO ORGANIC OR ALKALINE COMPOSITION FOR SELENIUM AND/OR THALLIUM

Comments for OEHD Sample #: 97019811 OTHER FUEL HYDROCARBONS PRESENT.

æ <del>2.</del> ≅ Comments for OEHD Sample #: 97019849 LARGE AMOUNTS OF SUBSTITUTED SILOXANE COMPOUNDS (SYNTHETIC HYDROCARBONS)?

Comments for OEHD Sample #: 97019849 TRACE AMOUNTS OF JP-8.

Reviewed By:

Chlef, Environmental Chemistry Branch VICTORIA S. DUNOVANT, LI Col, USAF,



# ARMSTRONG LABORATORY

Occupational & Environmental Health Directorate/OEA 2402 E. Drive, Bldg 140 Brooks AFB, Texas 78235-5114 (210) 536-3626, FAX (210) 536-9043

### WHITEMAN PROJECT 17 DATA SUMMARY FORM INORGANIC

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Volatile Companded Colida	Turbidity	Surfactants	Suffides	Sulfales	Specific Conductance	Silica	Residue, Volatile	Residue, Nonfilterable	Residue, Filterable	Residue, Sellleable	Residue, Total	Langlier Index	Color	Chloride	Bromide	Alkalinity, Total	Acidity, Total	Group G	Phenois	Group E	Cyanide, Total	Group D	Phosphorus, Total	Phosphale, Ortho	Nitrate+Nitrite	Kjeldahl Nitrogen	Ammonia	Group C	TPH	Oil & Grease	Group B	Total Organic Carbon	COD	Group A	Compound		Tracking Numbers CN9/0240 & GN9/0240	Sample Numbers 9/020048; 56, 65, 71, 84-90	Date Collected 97/03/26
a	TN	0.2	0.1	663	518	Z	2	15	340	-0.2	N	N,	Z	38.7	Z	Z	Z		<10		<0.005		0.22	0.15	0.12	0.8	<0.2		83	83		6	21		Result	SILE	CN9/024	9/020048	02/20/20
97020080		97020089	97020090	97020089	97020089		-	97020089	97020089	97020089				97020089 97/03/31					97020088 97/04/01		97020087 97/04/01		97020086 97/04/02	97020086 97/04/02	97020086	97020086	97020086		97020085 97/04/08	97020085 97/04/08		97020084 97/04/01	97020084		NUMBER		) & GN9/024	8 65 /1	60.06
\$2020089 B7/02/24		97/03/31	97020090 97/04/07	97020089 97/03/31	97020089 97/03/31			97/03/31						97/03/31					97/04/01		97/04/01		97/04/02	97/04/02		97/04/02	97/04/02		97/04/08	97/04/08		97/04/01	97/04/01		Date			84-90,	3
_	_	B	B	L					-	80				L					_										3.68	7.04		-			Q Result	SITE 7	CN9	9/02	97/03/26
				-	! :-	<u> </u>		-							<u> </u>								1									-				1	CN970241 & GN970241	97020049 66, 72, 91	9/26
			_	-									<u> </u>  -																: :	97020091 97/04/08					OE NUMBER D		970241	2: 91:	?
					: : :	-	-	:	-			_															-		4/08	4/08					Date Q				
3	Z,	0.7	ô.1	266	1044	N	N	257	780	8	N,	N	Z	8	N.T	NT	N		<10		<0.005		3.15	2.6	0.12	0.8	<b>60.2</b>		1.12	<u>.</u>		=	<10		Result	SITE 9	CN97024	97020050	97/03/26
97020101		97020101	97020102	97020101	97020101			97020101	97020101	97020101				97020101					97020100		97020099		97020098	97020098	97020098	97020098	97020098		97020097	97020097		97020096	97020096		OE NUMBER		CN970243 & GN970243	97020050; 58; 67; 74; 96-102;	
97/03/31		97/03/31	97/04/07	97/03/31	97/03/31			97/03/31	97/03/31	97/03/31			, ,	97/03/31					97/04/01		97/04/01		97/04/04				97/04/04		97/04/08	97/04/08		97/04/01	97/04/01		Date		43	96-102	
P	Z,	D.	a <0.1	167.5	797	N.	Z	10	602	в <0.2	N,	N,	N	9.5	N	3	N		СВС		<0.005	1	0.31	ê.	0.85	ω	0.65		23.2	24.8	]	СВС	СВС		Q Result	SITE 10	CN970	970200	97/03/26
07000400		97020126	97020127	97020126	97020126		<u>.</u>	97020126	97020126	97020126				97020126				1	97020125		i		970201	97020123	97020123	970201	97020123		97020122	97020122		97020121	97020121		OE	0	CN970247 & GN970247	97020054; 62; 78; 121-127;	6
מבחולם מכי	1		127 97/04/07	26 97/03/28				26 97/03/28	26 97/03/28	26 97/03/28				26 97/03/28			_		25 97/04/01		97020124 97/04/01		97020123 97/04/04		23 97/04/04	97020123 97/04/04	23 97/04/04		- 1	22 97/04/08			97/04/01		ER Date		0247	21-127;	
3		-	)7 B	æ	æ					8				8	-		-		5						İ	İ			3			-	-]		۵				
1	N N	ê -	0.2	250.4	891	Z	Z	14	656	0.4	Ŋ	Z	NT	20.3	N	N.	Z		<b>^10</b>		<0.005		6.1	6.1	0.4	13	40.2		11.4	11.9			â		Result	SITE 11	CN970248	97020055;	97/03/26
2000		97020133	97020134	97020133	97020133			97020133	97020133	97020133				97020133					97020132		97020131		97020130 97/04/04	97020130	97020130	97020130	97020130		97020129	97020129		97020128 97/04/01	97020128 97/04/01		OE NUMBER		CN970248 & GN970248	97020055; 63; 79; 128-134;	
2	_ !				97/03/28				97/03/28	97/03/28				97/03/28				1	97/04/01		97/04/01		97/04/04	97/04/04	97/04/04	97/04/04	97/04/04		97/04/08	97/04/08		97/04/01	97/04/01	- 1	Date		8	-134	
$\dagger$		80	<b>.</b>		835	N,	N			a <0.2	N.	N	Z	44.2	N,	Z	NT	Ī	NT	Ì	N.		1.95	1.7	13   6	2 (2	7	-	112	152		33	1149		Q Result	SITE 12	CN97	97020	97/03/26
	1	97020095	Í		97020095			97020095		97020095	-			97020095		+	-		-		_		970200	97020094	97020094	97020094	970200		97020093	97020093		970200	97020092	-	OE NUMBER	12	CN970242 & GN970242	97020057; 73; 92-95;	26
2	_ [	095 97/03/31	-	095 97/03/31	095 97/03/31				095 97/03/31	095 97/03/31	1		!	095 97/03/31	-	-	_	-			-				- 1	04 97/04/04				97/04/09	_		92 97/04/01	- 1	ER Date		170242	·95;	
-		3		ا ت	3			3		/31 B	-	<u> </u>	-	<b>4</b>	-	1	_	-	4		4		¥   :	K	K   2	4   3	<u> </u>		55   8	5		<u>=  </u>	=	ŀ	0				

# DATA SUMMARY FORM VOLATILE ORGANICS Wastewater Samples (109/L)

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					Vinyi Chloride	o-Ayrene	O-Xylana o p-Aylana	T Yulong & O Yulong	Trichloroffouromethane	Trichlosophoon	1.1.2-Trichloroethane	1.1.Trichlornethane	Toluene	Tetrachloroethene	1,1,2,2-Tetrachloroethane	Methylene Chloride	Ethylbenzene	Irans-1,3-Dichloropropene	cis-1,3-Dichtoropropana	1,2-Dichloropropane	Wans-1,2-Dichloroethene	1,1-Dichloroethene	1,2-Dichloroelhane	1,1-Uchioroethane	1,4-Dichlorobenzene	1,3-Dichlorobenzene	1,2-Dichlorobenzene	Dibromochloromethane	Chloromethane	Chloroform	2-Chloroethylvinylether	Chloroethane	Chlorobenzene	Carbon Tetrachloride	Bromomelhane	Bromoform	Bromodichloromethane	Benzene	EPA 624 OR 601/602	Compound	-	Iracking Numbers CN970240 & GN970240	Sample Numbers 197020048; 56; 65; 71; 84-90;	Sample Minister Office of the Control of the Contro
				-	ŝ	Ĝ	. 6	5 6	6	, ,	5 6	3	ŝ	ŝ	ŝ	Ĝ	Ĝ	ŝ	ŝ	ŝ	Ġ	ŝ	Ĝ	Ĝ	ŝ	ŝ	ŝ	ŝ	S.	ŝ	ŝ	ŝ	Ĝ.	5	<u>\$</u>	ŝ	5	<u>\$</u>		Result	SITE 6	s CN97024	S 97020046	010000
					97020071	97020071	97020071	1/00/0/8	9/020071	9/0200/	97020074	0700074	97020071	97020071	97020071	97020071	97020071	97020071	97020071	97020071	97020071	97020071	97020071	97020071	97020071	97020071	97020071	97020071	97020071	97020071	97020071	97020071	97020071	97020071	97020071	97020071	97020071	97020071		NUMBER	3	0 & GN9702	56, 65, 71	
					97/03/31	97/03/31							<u> </u>			97/03/31	97/03/31	97/03/31	97/03/31	97/03/31	97/03/31	97/03/31	97/03/31	97/03/31		97/03/31			<u>_</u>				97/03/31					97/03/31		Date		40	84-90	
					NSR	NSR	NSR	NSR	NSR	Nox	NSR		NSD	No.	NSR	NSR	NSR	NSR	NSR	NSR	NSR	NSR	NSR	NSR	NSR	NSR	NSR	NSR	NSR	NSR	NSR	Nep	NSR	Ne l	NSD	Neg :	NSR	NSR		Q Result	SITE	CN9	9702	97/03/20
			+		97020072	97020072	97020072	97020072	97020072	97020072	97020072	7,002016	27000072	200000	97020	97020072	97020072	97020072	97020072	97020072	97020072	97020072	97020072	97020072	97020072	97020072	97020072	97020072	97020072	97020072	97020072	0702002	21002016	07020072	27002078	07070	9702072	62000025			7	CN970241 & GN970241	97020049; 66; 72; 91	02/
	-				072	072	072	072	072	072	072	2.0	072	2 2	079	079	072	072	072	072	072	072	072	072	072	072	072	072	072	077	2072	3 2	2/2	1	2/07	3 6	1072	222	ŀ	<del>B</del>	1	970241	2, 91	-
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4						6	<u>ئ</u>	6	6	ŝ		1	1 6	Ì													δ (e		3 6							Ĺ				Result	SITE 9	CN970243	97020050;	97/03/26
				1		97020074	97020074	97020074	97020074	97020074	┷-	97020074				,	- 1			,							97020074			t					4	4				OE NUMBER		CN970243 & GN970243	97020050; 58; 67; 74; 96-102	
1					97/03/31	97/03/31	97/03/31	97/03/31	97/03/31	97/03/31	97/03/31	97/03/31	97/03/31	97/03/31	15/50//8	10000	7/03/34	97/03/31	97/03/31	97/03/31	97/03/31	97/03/31	97/03/31	97/03/31	97/03/31	97/03/31	97/03/31	07/02/24	9//03/31	15/60/76	97/03/31	97/03/31	97/03/31	97/03/31	97/03/31	97/03/31	97/03/31		Curo	Date		۱	6-102	
	1				2 3	2	<del>1</del> 00	2	<u>^1</u> 8	<u>^1</u> 8	<b>100</b>	200	<b>1</b> 00	<u>^1</u> 8	<u>^</u>	S	3 8	100	3 3	2 3	200	100	2	<u>â</u>	â (8	3 8	3 8	2 2	<u>^100</u>	<u> </u>	<b>^100</b>	<u> </u>	18	â	â	<u> </u>	<b>^100</b>		n keant	B	SITE 1	CN970	970200	97/03/26
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	-			0,00,01	_i_		,	- 1				8 97/03/31	8 97/03/31	8 97/03/31	<u></u>	_i		_:_		- 1			_!_	8 97/03/34	!		<u> </u>		ı			78 97/03/31	78 97/03/31	78 97/03/31	78 97/03/31	78 97/03/31	78 97/03/31		EK Date		2	0247	121-127	
+	+			5,7	7 5	7 9	<u> </u>	J	<u> </u>	5	<u> </u>	믓	<u>.</u>	Þ,k	1 b,k <5	1 b,k <5	Ş	, O	, <u>,</u>	, <u>,</u>	7   0	,,,	7 5	7   5	7   5	<del></del>	, D	,b,	b,x	Ď,	b,k	, <del>,</del>	, <u>,</u> ,	<u>5</u>	Þ.×	, <u>.</u> ,	Ď,		٥		10.6			
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-	<u> </u> 			b,k <5	S						5 6			_		b,k <5	b,k <5	b,k <5	b.k		b,k <5	b,k <5	b,k <5			b,k <5	b,k <5	b,k <5		-		-		_			b,k -65		Q Result	SI 15 12	CN970	97020	97/03/26	2000
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				3 97/03/31	3 97/03/31	3 97/03/31	<u> </u>						<u>;</u>		1	_		3 97/03/31	3 97/03/31	3 97/03/31	3 97/03/31	73 97/03/31	73 97/03/31	97/03/31	73 97/03/31	73 97/03/31		73 97/03/31	- !		73 97/03/31		73 97/03/34	1_		. !	73 97/03/31	ľ	ER Date	_	70242	-95		
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### DATA SUMMARY FORM

#### SEMI-VOLATILE ORGANICS Wastewater Samples

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-			70303		3	+	_!_	97020054	_ !	+		97020050	- -	2		97020049	â	•		97020048	<del>1</del> 0	1,3-Dichtorobenzene	ŝ
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	SEE EPA METHOD608	d,i SEE EPA	97/03/31 d	97020055	ABSENT	d,h	97/03/31	97020054	g ABSENT	31 d,g	050 97/03/31	NT 97020050	,f ABSENT	02 d,f	1			d, e		+	ABSENT	4,4-001	
_	d,i SEE EPA METHOD608	, SEE EPA	97/03/31 d	97020055 97	ABSENT	ď.	97/03/31	1 97020054	9 ABSENT	31 0,8	050 97/03/31	050020 IN	ABSEN	1,0				٥		<del>-</del> -	2000	1000	
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		Ž,	97/03/31 i	97020055 97	3	5	97/03/31	97020054	27	31 0	)50 97/03/31	97020050	â	72	970402	97020049	î	0		9/020048	150	4-Choro-3-memyi Phenoi	6
<u>:</u>	:	<u>-</u>	97/03/31 d,i	97020055 97	ENT	d,h	97/03/31	1 97020054		9.0	<u>.</u>	<u>.</u>	ABSEN	7			Apocal		_	070200	5 5	A photo a main of	`.
		- Z	97/03/31			-							2	5 k	_		2000			97020048	ABSENT	Chlordana	
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1		1	703/34		3	- 1		97020054		-		97020050	<u> </u>	กั -		97020049	â			97020048	<del>10</del>	4-Bromophenyl Phenyl Ether	ŝ
1		2	97/03/31				1.	97020054	- !			97020050	10.9	بة ا		97020049	10	•	97/03/31	97020048	51.9	Bis(2-ethylhexyl)phthalate	ŝ
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1		Ž,	97/03/31		10	=	97/03/31	97020054	<b>- 27</b>	<u>~</u>	50 97/03/31	97020050	<del>1</del> 0	2	9 970402	97020049	á	•	97/03/31	97020048	â	Bis(2-chloro ethyl)ether	5
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	SEE EPA METHOD608		97/03/31 d,i	97020055 97	ABSENT	d,h	97/03/31	97020054	ABSENT	0.0	50 97/03/31			2 d,f	9 970402	<u></u>	ABSENT	0,0		97020048	ABSENT	beta-BHC	:
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		N,	97/03/31		÷	3	97/03/31	9/020054	٠.	80	<u>:</u>	02002078	á			64007076	5 6	1		0700000	3 8	Boardalanaga	<u>ک</u> د
		Z	97/03/31			1	97/03/31		12	-	<u> </u>	000000		1	. 1	0700000	5 6	+		07000040	3 6	Rento/alanhranan	3
_	SEE EPA METHODEOR		97/03/31 0.1		i N		2//03/3	2002016	<del></del> -	+				1	:	<u>.</u>	5			97020048	ŝ :	Renzidine	ŝ
-		_	÷	_!_			07100104		<u>-</u> +	+				3			ABSENT	d e		97020048	ABSENT	Aroclor 1260	
-	1.0	1 7	1				07/02/24	_	_	÷	,		4	-	_ 1		<b>1</b> 0	<b>a</b> :		97020048	<b>:</b>	Anthracene	ŝ
	AETHODEOS	2 :	+		ENT		97/03/31		-	_				a	:		ABSENT	d <b>0</b>	97/03/31	97020048	ABSENT	Aldrin	
+		2	97/03/34				97/03/31	97020054	27	-	50 97/03/31	97020050	â	2		97020049	10	Ф	97/03/31	97020048	<b>^10</b>	Acenaphthylene	Ĝ
	_	NT T	97/03/31	97020055 97/	â	-	97/03/31	97020054	<27	- 0	50 97/03/31	97020050	<del>10</del>	.,	970402	97020049	<b>10</b>	•	97/03/31	97020048	ô	Acenaphihene	ŝ
1	ľ		-	ı																		EPA 625	
۵	NUMBER Date	Result	Date	NUMBER I	Result	۵	Date	NUMBER	Result	۵	ER Date	NUMBER	Result	۵	R Date	NUMBER	Result	Q	Date	NUMBER	Result	Compound	(ug/L)
		SITE 12		3	SITE 11	1		2	SITE 10	1		2	2115	_	<del>-</del> :	2	OILE /	_		OE .	0	-	
	CN970242 & GN970242	CN970242		CN970248 & GN970248	N970248		17	N970247 & GN970247	CN97024		0243	CN9/0243 & GN9/0243	ZO/GNO	ì	241	CINE 2	70,611		ć	0 CH3/02	CITE	OFZO CEND & OFZO CEND ELECTRICAL FULL CONTROL OF CONTRO	
L	73, 92-95,	97020057; 73; 92-95;		97020055; 63; 79; 128-134;	7020055;	ļ	12/	1/020054; 62; 78; 121-127;	C007078	i	4, 90-102,	9/020030, 30, 07, 74, 90-102,	20200			CHOZO24 8 CHOZO	0.000	!	5 9	E CN0703	CNOZOSAO	Tracking Numbers	at clina
		97/03/26			97/03/26	1		20. 40.	97/03/20		200	0. 69. 67. 7	0700006			. 66: 75: 01 []	9702004		84-90	56: 65: 71:	97020048	Sample Numbers 97020048: 56: 65: 71: 84-90:	Rethod
					2000				ancolto		1.5.1		07/03/20				97/03/26				97/03/26	Date Cellected 97/03/26	

# DATA SUMMARY FORM SEMI-VOLATILE ORGANICS (cont'd) Wastewater Samples

Method	rim!	(ug/L)	Ĝ	Ĝ	. 6	Ĝ	3	Ĝ	6	ŝ	:	ŝ	ŝ	:	۲,	ô		ኇ	ŝ	ŝ	<u></u>	٠ ئ	<u>ን</u> :	<u>ۍ</u>			3	٤	6																		
Sample Nombers 97020048; 56; 65; 71; 84-90;	SITE 6	Compound	2,4-Dinitrophenol	2.6-Dinitrotoluene	Z,4-Unifrotoluene	Fluoranthene	FILOTENE	Hexachlorobenzene	Hexachlorobutadiene	Hexachlorocyclopentadiene	Hexachloroethane	Indeno(1,2,3-c,d)pyrene	Isophorone	4.4.Methylenedianitine	Nachthologo (Manhibotopa )	Naphthalene	N-Nitrosodi-n-Propylamine	N-Nitrosodiphenylamine	Nitrobenzene	2-Nitrophenol	4-Nitrophanol	Pentachlorophenol	Phenanthrene	Phenol	Pyrene	Toxanhana	1 2 A Technology	1,2,4-1 Relibropenzene	2,4,5-1richiorophenor																		
97020048	SITE 6	Result	ŝ	<b>10</b>	<b>^10</b>	<b>^10</b>	6	<b>^</b> 10	ô	<b>10</b>	á	â	<u> </u>	3 6	2	<b>^10</b>	â	<b>10</b>	â	â	3	2	5 : 6	3	5 :	ADCENT	MODENI	610	010																		
56; 65; 71;		NUMBER	97020048 97/03/31	97020048	97020048	97020048	97020048	97020048	97020048	97020048				04007016	94007076	97020048 97/03/31	97020048	97020048	97020048	97020048	0702049	97020040				04007016		97020048	97020048																		
84-90,		Date	97/03/31	97/03/31	97/03/31	97/03/31	97/03/31	97/03/31	97/03/31			97/03/31	97/03/34	97703731	16/60//8	97/03/31	97/03/31	97/03/31		97/03/34			97,007,01	97/03/31	20000	10.0001	15/50//8	97/03/31	97/03/31																		
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97020049; 66; 72; 91;	SITE 7	Result	<10 9	<10 9	<10 9	<b>10</b>		10 9	j							<10 9	10	İ			İ				į		ABSENT 9	60	<10 9		-								+								
6; 72; 91;	1 GN9/024	OE NUMBER	97020049				97020049		!	- 1	- 1			1	97020049	97020049					4	,	i	1	<u>:</u> _	i	97020049	97020049	97020049																	_	
		Date	970402	970402	970402	970402	970402	970402	970402	970402	970402	070/02	9/0402	970402	970402	970402	970402	970402	201070	20407	9/0402	970402	970402	970402	970402	970402	970402	970402	970402																		
9	S	D	_	<u> </u>	_	<u> </u>	<u>~</u>	_	_	- -	- -	-!-	-	-	-	_	<u>~ </u>	- j -	- -	-	-	-	-	-	-	-	<u>а</u> А	^	-	$\dashv$	1	+	4	4	1	1	+	+	+	-	_		4	-	4	_	
97020050; 58; 67; 74; 96-102;	CN970243 & GN970243 SITE 9	Result					10 9					İ		60	10 9					İ	<b>10</b> 9		<10	40	<10 9	÷60	ABSENT 9		<b>10</b>			_		1													
8; 67; 74;	GN97024	OE OE	97020050		- 1		- :	i_		<u>:</u>			i	97020050	97020050	- 1		<u>.</u>	1	1	97020050	97020050	97020050	97020050	97020050	:	97020050	:	97020050	<u> </u>																	
96-102;	3	,	97/03/31	97/03/31	97/03/31	97/03/31	97/03/31	97/03/31	97/03/34	07/03/34	15/50/76	97/03/31	97/03/31	97/03/31	97/03/31	97/03/31	97/03/31	07/00/04	9//03/31	97/03/31	97/03/31	97/03/31	97/03/31	97/03/31	97/03/31	97/03/31	97/03/31	97/03/31	97/03/31																		
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97020054	CN970247		<27	7	7		407	<27	27	3	\$27	<b>&lt;27</b>	<27	<b>~27</b>	<27	5				<27	<b>^27</b>	<27	<27		<27	<27	ABSENT																				
97020054; 62; 78; 121-127;	CN970247 & GN970247	OE.	אסמממלים	97020054	97020054	97020054	0700064	1300007	97020054	9/020054	97020054	97020054	97020054	97020054	97020054	97020054	200000	9/020054	97020054	97020054	97020054	97020054	97020054	97020054	97020054	97020054	97020054	97020054	9700054	10002010																	
1-127	47	_		07/03/34		07/03/31						97/03/31	97/03/31	:			<u> </u>	97/03/31	97/03/31				'					97/03/34	07/03/24	97703731												Ì					
			-	-	_i_		_!	-   -	1		=	7	<b>-</b>		-	- =	1.		3	<b>5</b>	i	_ !					- 1	-	┵	5															Ī	Ì	Ī
97020055	CN970248	:	Kesult	â	5	6	2	20	10	10	40	6	10	10	40	16	Of?	40	<b>^10</b>	6	10	ક	\$	6	3	6	2			56																	
97020055: 63: 79: 128.134	CN970248 & GN970248	OE.	NUMBER	97020055	9/0/0000	97020055	000000	97020055	97020055	97020055	97020055	97020055	97020055	97020055	07000066	CC007078	97020055	97020055	97020055	97020055	97020055	97020055	97020055	97020055	97020055	97020055				97020055																	
1114	48	<del>-</del> ;	1-	1	:		<u> </u>		97/03/31	97/03/31	97/03/31	97/03/31		<u> </u>	0.000	97/03/31	97/03/31	97/03/31	97/03/31	97/03/31	07/03/34	97/03/34	07/03/34	97/03/34	97/03/34	97/03/34	070000	10/00/18	15/201/6	97/03/31																	
97/03/26	CN97		Q Result	- NT	- NT	-  S	- 27	- NT	 K1	- N	- 2	- 2	3	-   .	Ţ-	- NT	_ Z	NT	- N	- N		-   -		-   -	212			ᆵ	-	- NT										1	I						I
126	CN970242 & GN970242	06	I NUMBER								-		-	-	1			-	-	1	-					-		SEE EPA METHOD608		+											+				<u> </u>		-
	970242	_!	3ER Date								-	1	1		-							1		-	-	1	-	909GC			1							+	.								
1			0		!				į	į	-		-	1			Ì	1	í			[	1	1	-												- [	- 1	-		1					İ	

# DATA SUMMARY FORM METALS Wastewater Samples (mg/L)

				:	•		<0.10 mg/		¢0.05	<b>\$0.05</b>	<0.21	6001	<0.14	^	60.01	\$0.005	2	<0.03	<b>60.03</b>			4	<0.02	<0.03	<0.02	<0.05	<0.01	۵	6.001	20.00	60.00	\$0.005	<b>\$0.003</b>	<0.030		(mg/L)		imie	Detection	Rethod
				Thallium (low recovery)	Selenium (low recoveries)		2(2-Butoxyeloxy)Elhanol	8016 MOD (AFFF)		Vanadium	Titanium	Thallium	Strontium	Sodium	Silver	Selenium	Polassium	Nickel	Molybdenum	Mercury	Manganese	Magnesium	Lead	Iron	Copper	Cobalt	Chromium	Calcium	Cadmium	Bergillum	Barium	Arsenic	Anlimony	Aluminum	Group F	Compound	-	Green Guissan	Tracking Numbers	Sample Numbers 97020045
			1	+	38.2		<0.1	-	0.044	N	<0.025	-ô.001	0.321	N	0.006	0.016	N	<0.010	<0.030	0.0005	Z	N	0.005	0.498	0.028	<0.025	^0.005	N C	200	\$0.0005	0.046	ô.005	<b>6</b> 0.003	0.070		Result	0110	CITE	CN97024	07000048
-			[		9702005		97020065		9702005		9702005	9702005	9702005		9702005	9702005		9702005	9702005	9702005			9702005	9702005	9702005	9702005	97020056	0,01000	97000056	9/020056	97020056	97020056	97020056	97020056		NUMBER	QE .	O CHOICE	0 & GN0703	EG. SG. 74.
							97/04/02		6 97/04/03				6 97/04/03			6 97/04/03		6 97/04/03		6 97/04/03						97/04/03	97/04/03						97/04/03	97/04/03		Date		ż	96.50	000
					۵											c										j			İ							Q R		, (	216	- u
			1				0.597		N	NT	NT	N T	NT	×	NT	N.	N	N	N	N.	Z,	2	NT	N	3	ZI :	1	4	1 1	=	4	4	=	9			- F /	120741 8	1020049, 6	9//03/26
							97020066																													NUMBER	OE	CN9/0241	6, 72, 91	) 4 2 1
		i					97/04/02																													Date				
					9.5%		6.1		0.216	NT	<0.025	<b>*</b> 0.001	0.0	N.T	<0.005	<0.005	N.	0.162	<0.030	0.0003	Z,	Z,	0.004	52.7	0.021	40.025	2001	100.0	N	0.004	0.062	0.01	<0.003	0.925		Q Result	SITE 9	CN9702	970200	97/03/26
		1			970200		970200		970200			10	1 1		<u> </u>			970200		970200			9702005	9702005	9702005	9702005	0702001	9/02005		9702005	9702005	9702005	9702005	9702005		NUMBE	2	43 & GN970	50, 58, 67, 7	5
	1			, ,			97/04/		58 97/04/0		058 97/04/0	58 97/04/0	058 97/04/0		1					i		,			<u> -i</u>	_1_										R Date	-	243	4, 96-102	
	<u> </u>	-			ଞ 		×		3		చ	3	2	_				3		i	-	1	T	1	$\dagger$	$\dagger$	$\dagger$	+	T	ω						۵	1			
					25%		NT		0.031	N.	<0.025	<b>&lt;</b> 0.001	0.415	N	<0.005	<0.005	NT		<0.030	0.0011	NT	Z	5	_ !_			L		⊥_	_			!			Result	SITE 10	CN970247	97020054;	97/03/26
				-	97020062				97020062		97020062	97020062	9702006		97020062	97020062	1	97020062	97020062	97020062			97020062	97020062	20002016	29002018	000000	97020062		97020062	97020062	97020062		97020062		NUMBER	2	& GN9702	62; 78; 121	
					97/04/03						97/04/03	97/04/03	97/04/03	-				97/04/03	97/04/03	97/04/03		3	97/04/03	97/04/03	07/04/03	9//04/03		97/04/03		97/04/03	97/04/03	97/04/03	97/04/03	97/04/03	- 1			17	-127;	
	1				24 39		3		0.14	Z,		ô		Z.	6.00	c, •	N N	ô.01	<b>60.03</b>	0.000	N I	N C.O.	4	2 6	6 6	40.00	Z	<b>^0.00</b>	TIN	<0.00	0.038	<0.00	<b>6</b> .00	0.025			SITE	CN97	97020	97/03/26
-	1	-						-	97020	- !		_				_		1			1	1	L	1	1		1_			5	-	1		╛	ŀ			)248 & GN9	055; 63; 79,	26
	1				I_		_	-	063 97/04		0063 97/04	063 97/04	0063 97/04	-	063 97/04	063 97/04/			1_		+					063 97/04/				363 97/04/	X63 97/04/	¥63 97/04/	63 97/04/	63 97/04/	ľ		lo	70248	128-134;	
	1	-			İ				+	j	i	-		1	1	٠.	İ	1				$\dagger$	Ť			İ	Ĺ				1	1	Ì			0	S	C	9	9
	-						4	L		÷	<del>-</del>	<del>+</del>	391		- 1	i	$\perp$					$\perp$	1.	$oldsymbol{ol}}}}}}}}}}}}}} $	J	1_				8	- 1	<u>.</u>			-		ITE 12	N970242 8	7020057; 7	97/03/26
					<u> </u>			- 1					37020057				- 1	1_	!_	_ L.			-!-					!			020057 9	020057 9	020057 9		- 1			1 GN97024	3; 92-95;	
				97,04,03	70403			3,100	77/04/03		37/04/03	37/04/03	77/04/03				01101	7/04/03	7/04/03	17/04/03		37704703	7//04/03	37/04/03	17/04/03	7/04/03		7/04/03		7/04/03	7/04/03	7/04/03	7/04/03	7/04/03	-	) 		2		
					Thallium (low recovery)	38.2 97020056 97/04/03	Selenium (low recoveries)   38.2   97020056   97/04/03   97020058   97/04/03   25%   97020062   97/04/03   24.3%   97020063   97/04/03   21%   97020067   97020067   97/04/03	38.2   97020056   97/04/03   97/20066   97/04/03   97/20058   97/04/03   25%   97020057   97/20057   97/20057   97/20057   97/20058   97/20058   97/20058   97/20058   97/20058   97/20058   97/20058   97/20058   97/20057   97/2005	Selenium (low recoveries)   38.2   97020056   97/04/02   0.597   97020056   97/04/02   0.597   97020057   97		NT	NIT   NIT			NT   NT   NT   NT   NT   NT   NT   NT	NOTE   97020056   9704003   NT	0.016   9/020056 9/104003   NT	NT   NT   NT   NT   NT   NT   NT   NT	NT   0.005 9702005 970403   NT   0.025 9702005 970403   0.12 9702005 970403   0.012 9702005 970403   0.012 9702005 970403   0.012 9702005 970403   0.012 9702005 970403   0.012 9702005 970403   0.012 9702005 970403   0.012 9702005 970403   0.012 9702005 970403   0.012 9702005 970403   0.012 9702005 970403   0.012 9702005 970403   0.012 9702005 970403   0.012 9702005 970403   0.005 9702005 9702005 970403   0.005 9702005 9	40.000   97020056   9704003   NT		Not   Not	NT	NT   NT   NT   NT   NT   NT   NT   NT	O.035   9702005   970403   NT	O.C.28   ST/COCOSS   ST/CHAICS   N.T.	Colors   Strongos	O.1055   07020058   9704003   NT	No.	No.   No.	No.   1972,0005	COUCHE   STRUCTORS   STRUCTO	Color   Stracces   Stractes   S	Octobe   500000000000000000000000000000000000		OLOTO   SPECCOSS STANDOS   STANDOS		Decision   Composite   Compo	Composited   Com	

### DATA SUMMARY FORM COMMENTS

Wastewater Samples page 1 of 1

: SEE COMMENT.

< - Signifies none detected and the detection limits

SE:3 : Absent

#### Comment Code

- HOLD TIME EXCEEDED.
- OTHER FUEL HYDROCARBONS ARE PRESENT.
- SAMPLE SPIKE RECOVERIES ARE LOW DUE TO ORGANIC OR ALKALINE COMPOSITION SELENIUM AND/OR THALLIUM.
- All pesticides (EPA METHOD 625) were absent qualitatively.
- Comments for OEHD Sample #: 97020048 HEAVY EMULSION. SAMPLE CONTAINED TRACES OF FUEL-TYPE HYDROCARBONS.
- Comments for OEHD Sample #: 97020049 HEAVY EMULSION. SAMPLE CONTAINED MODERATE AMOUNTS OF HEXYLENE GLYCOL AND 3,3-DIMETHYL-2-BUTANOL
- Comments for OEHD Sample #: 97020050 HEAVY EMULSION. SAMPLE CONTAINED LARGE AMOUNTS OF FUEL-TYPE HYDROCARBONS AND MODERATE AMOUNTS OF BUTYLATED HYDROXY TOLUENE, SILICIC ACID, AND PHOSPHORIC ACID.
- **-:** ∃ Comments for OEHD Sample #: 97020054 SAMPLE CONTAINED LARGE FUEL LAYER. DETECTION LIMITS ADJUSTED TO REFLECT CALCULATION FOR SAMPLE SIZE OF 375 ml.
- Comments for OEHD Sample #: 97020055 SAMPLE CONTAINED A MODERATE AMOUNT OF JET FUEL (HYDROCARBONS C12-C16)
- Coded Results for OEHD Sample #: 97020072 CANCELLED NSR : NO SAMPLE RECEIVED
- Comments for OEHD Sample #: 97020078 & 97020079 DILUTION WAS REQUIRED FOR SAMPLE ANALYSIS, RESULTS HAVE BEEN ADJUSTED
- Coded Results for OEHD Sample #: 97020121 CANCELLED CBC : CANCELLED BY CHEMIST
- SAMPLE WAS CANCELLED BECAUSE OF THE NATURE OF THE SAMPLE BEING PRIMARILY FUEL

Comments for OEHD Sample #: 97020122 SMALL AMOUNTS OF JP-8

Coded Results for OEHD Sample #: 97020125 CANCELLED CBC : CANCELLED BY CHEMIST SAMPLE COULD NOT BE ANALYZED FOR PHENOL BECAUSE IT WAS MOSTLY OIL AND FUEI

**∃** 

Reviewed By:

Chlef, Environmental Chemistry Branch



# ARMSTRONG LABORATORY

Occupational & Environmental Health Directorate/OEA 2402 E. Drive, Bidg 140 Brooks AFB, Texas 78235-5114 (210) 536-3626, FAX (210) 536-9043 WHITEMAN PROJECT 17 DATA SUMMARY FORM

INORGANIC

Wastewater Samples

	(mg/L)	Cimit	Detection	Method	
C-2017 A	Compound		Tracking Numbers CN970254 & GN970254	Sample Numbers 97020311; 321-25; 369;	Date Collected 97/03/27
	Result	SITE 6	CN97025	97020311	97/03/27
	OE NUMBER		& GN9702	321-25; 36	
	OE OE OE OE OE NUMBER Date Q Result NUMBER Date Q Result NUMBER Date Q Result		Z	Ģ	
	۵	(0		10	
	Result	SITE 7	N970255 8	7020312; 3	97/03/27
	OE NUMBER		CN970255 & GN970255	97020312; 326-331; 370;	
	Date			,,	
	Ω	8	0	9	_
	Result	SITE 9	N970256 8	7020313;	97/03/27
	OE NUMBER		CN970256 & GN970256	97020313; 332-38; 371;	
	Date				
	۵			£	
	•		CN970260 8	7020316	Meshir
	OE NUMBER		:N970260 & GN970260	10216-372	ALC: NO
	Date			WAY!	
	D R	S	C	9	
	esult	SITE 11	N970261 8	7020316; 3	97/03/27
	OE NUMBER		CN970261 & GN970261	97020316; 346-49; 373;	
	Date			1	
	Ω T	100		9	(C)
	esuit -	SITE 12	N970258	97020314; 339-341;	97/03/27
	OE OE OE OE OE OE OE OE OE OE OE OE OE O		CN970258 & GN970258	339-341;	
	Date		8		
	٥				

<0.2 mUL 41 41 41 41 41 41 40.1 40.1	60.2 ml	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	40.2 ml	60.2 ml	6.2 m	4. 4. 4. 4. 4. 4. 4. 4. 4. 4. 4. 4. 4. 4	40.2 m	<0.2 m				units	<u>^</u>					<10 ug/L		<0.005		<0.10	6.1	<u>^</u>		<0.2		4	<b>60.3</b>		4	<b>10</b>	
Residue, Nontillerable Residue, Volatile Silica Silica Surface Surfaces Surfaces					Residue, Volatile Silica	Residue, Volatile	Residue, Nonfilteracie		Residue, Filterable	UL Residue, Settleable	Residue, Total	Langlier Index		Chloride	Bromide	Alkalinity, Total	Acidity, Total	Group G	Phenois	Group E	Cyanide, 1	Group D	) Phosphorus, Total		Nitrate+Nitrite	Kjeldahl Nitrogen	Аттопів	Group C	ТРН	Oil & Grease	Group B	Total Organic Carbon	COD	Group A
07.8 07.8	NT 514 8	NT 514	NT NT 514 67.8	NT 514	NT	NT		22	312	0.4	TN	NT	NI	39.0	Z	NT	Z,		N		<0.005		0.29	0.15	ô.1	1.0	<0.2		1.84	2.8		4.4	<10	
97020325	9702032			9702032	9702032			9702032	9702032	9702032				9702032							97020324		97020323	97020323	97020323	97020323	97020323		97020322	97020322		97020321	97020321 97/04/04	
5 97/04/01				97020325 97/04/01	97020325 97/04/01			97020325 97/04/01	97020325 97/04/01	97020325 97/04/01				97020325 97/04/01					-		97020324 97/04/01		97020323 97/04/04	97020323 97/04/04	97020323 97/04/04	97/04/04	97020323 97/04/04		97020322 97/04/08	97020322 97/04/08		97020321 97/04/04	97/04/04	
	ċ	2	Z,	245.2	a 834	N,	NT	23	601	a 0.4	NT.	N	TN	31.9	N	Z,	NT		121		<0.005		0.39	0.33	0.46	1.8	i0.2		2.2	5.1		46.9	238	
		97020331		97020331	97020331			97020331	97020331	97020331				97020331					97020330		97020329		97020328 97/04/04	97020328	97020328	97020328	97020328		97020327	97020327		97020326 97/04/04	97020326	
	1	97/04/01		97/04/01	97/04/01			97/04/01	97/04/01	97/04/01				97/04/01					97/04/03		97/04/01		97/04/04	97/04/04	97/04/04	97/04/04	97/04/04		97/04/08	97/04/08		97/04/04	97/04/04	
-		J. 62 .	<0.1	407.2	B 1246	N	NT	2	976	1	NT	Z	Z	36.5	NT	N.	NT		ŝ		<0.005		0.86	0.83	0.46	1.1	<0.2		2.32	2.48		7.9	<b>^10</b>	
	-	97020337	9702033В	97020337	97020337			97020337	97020337	97020337				97020337					97020336		97020335		97020334 97/04/04	97020334	97020334	97020334	97020334		97020333	97020333		97020332 97/04/04	97020332	
_	-	97/04/01	97/04/08	97/04/01	97/04/01			97/04/01	97/04/01	97/04/01				97/04/01					97/04/03		97/04/01		97/04/04	97/04/04	97/04/04	97/04/04	97/04/04		97/04/08	97/04/08		97/04/04	97/04/04	
-	177.	100	a NT	280.6	906	3	N.	9	682	a <0.2	N.T	Z	NT T	12.8	Z,	N	NT		NT		NT		<b>6</b> 0.1	<0.1	1.18	1.8	0.8		54.4	56 × 1		СВС	A1290	
		97020345		97020345	97020345			97020345	97020345 97/03/31	97020345 97/03/31				97020345									97020344 97/04/04	97020344 97/04/04	97020344	97020344	97020344		97020343	97020343		97020342 97/04/07	280 157020342 97/04/07	
		97/03/31		97/03/31	97/03/31			97/03/31	97/03/31	⊢				97/03/31					_				97/04/04	97/04/04	97/04/04	97/04/04	97/04/04		97/04/08	97/04/08			97/04/07 h.t	
		<0.1	Z	282.5	a 975	N	N	1	702	a 0.2	N	Z	Z,	21.3	Z,	N,	N		NT		NT		ô.1	<0.1	0.66	0.7	<b>60.2</b>	٠	1.12	12		h,I 3.9	<u>^</u>	
		97020349		97020349	97020349			97020349	97020349 97/04/01	97020349				97020349									97020348 97/04/04	97020348	97020348	97020348	97020348		97020347	97020347		97020346 97/04/07	97020346	
_		97/04/01		97/04/01	97/04/01	 		97/04/01	97/04/01	97/04/01				97/04/01									97/04/04	97/04/04	97/04/04	97/04/04	97/04/04		97/04/08	97/04/08		97/04/07	97/04/07	
<u> </u>	-	Z	N,	N,	8 N	N	Ŋ	N	NT	B NT	Z	NT	NT	N,	NT	Z,	N,		N,		N		2.45	N	0.84	9.2	5.85		7.34	7.36		22.1	65	
																							97020341	97020341	97020341	97020341 9	97020341 8		97020340 8	97020340 9		97020339 8	97020339 9	
																					_		97/04/04	97/04/04	97/04/04	97/04/04	97/04/04		97/04/08	97/04/08		97/04/04	97/04/04	
	لـ	<u>_</u>	L	<u></u>	Ļ	L		<u> </u>	1_		_		<u></u>	<u></u>	<u></u>	L.	<u></u>	J	L	]	<u></u>	] 1	 1	<u> </u>	<u> </u>	<u></u>	<u> </u>	ļ		<u></u>	}	Ļ	L.	_

### **DATA SUMMARY FORM VOLATILE ORGANICS**

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Wastewater Samples

Limit (ug/L) Method Detection EPA 624 OR 601/602 Compound Date Collected 97/03/27
Sample Numbers 97020311; 321-25; 369;
Tracking Numbers CN970254 & GN970254 Result OE OE NUMBER Date 97/03/27 97020312; 326-331; 370; CN970255 & GN970255 SITE 7 Q Result 97/03/27 97/02/313; 332-38; 371; CN97/0256 & GN97/0256 SITE 9 OE NUMBER (ug/L) Date Q Result SITE 10 97020315; 342-45; 372; CN970260 & GN970260 97/03/27 OE NUMBER Date Q Result 97020316; 346-49; 373; CN970261 & GN970261 SITE 11 97/03/27 OE NUMBER Q Result NUMBER Date 97/03/27 97/02/314; 339-341; CN97/0258 & GN97/0258 SITE 12 Q

				60.0	500	6		50	\$5.0	<b>6.0</b>	\$5.0	<b>6</b> .0	<b>&lt;</b> 5.0	<b>\$5.0</b>	-5.0	<b>\$5.0</b>	<b>&lt;</b> 5.0	<5.0	<5.0	<b>\$5.0</b>	<5.0	<5.0	<b>&lt;</b> 5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<b>5.0</b>	<5.0	<5.0	<b>\$</b> .0	<b>&lt;</b> 5.0
				vinyi Chioride	O-Aylene	m-xylene o p-xylene	Trichloroflouromethane	Trichloroethene	1,1,2-Trichloroethane	1,1,1-Trichloroethane	Toluene	Tetrachioroethene	1,1,2,2-Tetrachtoroethane	Methylene Chloride	Ethylbenzene	trans-1,3-Dichloropropens	cis-1,3-Dichloropropene	1,2-Dichloropropane	trans-1,2-Dichtoroethene	1,1-Dichloroethene	11,2-Dichloroethane	1,1-Dichloroethane	1,4-Dichlorobenzene	1,3-Dichlorobenzene	1,2-Dichlorobenzene	Dibromochloromethane	Chloromethane	Chloroform	2-Chloroethylvinylether	Chloroethane	Chiorobenzene	Carbon Tetrachtoride	Bromomethane	Bromoform	Bromodichloromethane	Benzene
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## DATA SUMMARY FORM SEMI-VOLATILE ORGANICS Wastewater Samples

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Method Detection Limit (ug/L)	Sample Numbers   97020311; 321-25; 369;   Tracking Numbers   CN970254 & GN970254   CN970254 & GN970254   CN970254 & GN970254   CN970254 & GN970254   CN970254   CN97020369	Result	OE NUMBER 97020369 97020369 97020369 97020369 97020369 97020369 97020369 97020369 97020369 97020369	54 54 5704/01 97/04/01 97/04/01 97/04/01 97/04/01 97/04/01 97/04/01 97/04/01	970203 CN9707 SITE 7 SITE 7 Q Result 1 <10 1 <10 1 <10 1 <10 1 <10 1 <10	255	26-331: 370. 8 GN970255 OE NUMBER 97020370 93 97020370 93 97020370 93 97020370 93 97020370 93 97020370 93	Date  Date  97/04/01  97/04/01  97/04/01  97/04/01  97/04/01  97/04/01  97/04/01	9703 CN9 SITE O Ress d.i ABS d.i ABS d.i ABS d.i ABS d.i ABS	97020313; CN970256 i SITE 9 SITE 9 -10 9 -10 9 -10 9 -10 9 -10 9 -10 9 -10 9 -10 9 -10 9 -10 9	97020313: 332-38; 371; CN970256 & GN970256 SITE 9 OE Result NUMBER  10 97020371 0 07020371 0 07020371 0 07020371 0 07020371 0 07020371 0 07020371 0 07020371 0 07020371 0 07020371 0 07020371 0 07020371 0	Date Date 97/04/01 97/04/01 97/04/01 97/04/01 97/04/01 97/04/01 97/04/01 97/04/01		97020315, CN970260 SITE 10 SITE 10 413 413 ABSENT 413 ABSENT 413 413 413	97020315; 342-45; 372; CN970260 & GN970260  SITE 10  OE Result  NUMBER  13  97020372  97020372  9702401  ABSENT  97020372  9702401  ABSENT  97020372  9702401  13  97020372  9702401  13  97020372  9702401  13  97020372  9702401  13  97020372  9702401  13  97020372  9702401  13  97020372  9702401  13  97020372  9702401	2; 50 Date P7/04/01 97/04/01 97/04/01 97/04/01 97/04/01 97/04/01 97/04/01 97/04/01 97/04/01	<u>a _ a</u> _	97020316 CN97026: SITE 11 Result 410 410 ABSENT 410 ABSENT 410 410 410	9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	GN9: OE OE OE OE OE OE OE OE OE OE OE OE OE O	97020316; 346.49; 373; CN970261 & GN970261  SITE 11  OE Result  NUMBER  D  10  97020373  9702  10  97020373  9702  10  97020373  9702  10  97020373  9702  10  97020373  9702  10  97020373  9702  10  97020373  9702  10  97020373  9702  10  97020373  9702  10  97020373  9702  10  97020373  9702	Date 17/04/01 17/04/01 17/04/01 17/04/01 17/04/01 17/04/01 17/04/01 17/04/01 17/04/01 17/04/01 17/04/01 17/04/01	Date Q  Date Q  77/04/01 k  77/04/01 d, k  77/04/01 d, k  77/04/01 k  77/04/01 k  77/04/01 k	Date Q  Date Q  77/04/01 k  77/04/01 d, k  77/04/01 d, k  77/04/01 k  77/04/01 k  77/04/01 k	Date Q  Date Q  77/04/01 k  77/04/01 d, k  77/04/01 d, k  77/04/01 k  77/04/01 k  77/04/01 k	97020314: 339-341: CN970258 & GN970258 SITE 12 OE Date Q Result NUMBER 77/04/01 k NT 77/04/01 d.k SEE EPA METHOD608 77/04/01 k NT 77/04/01 k NT 77/04/01 k NT 77/04/01 k NT 77/04/01 k NT 77/04/01 k NT 77/04/01 k NT 77/04/01 k NT	Date Q  Date Q  77/04/01 k  77/04/01 d, k  77/04/01 d, k  77/04/01 k  77/04/01 k  77/04/01 k
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& &	A.4-DDT Dieldrin Dibenzo(a.h)anthracene 1.2-Dichlorobenzene	ABSENT	97020369 97020369 97020369 97020369	97/04/01 97/04/01 97/04/01	di ABSENT	SENT 97	97020370 9 97020370 9 97020370 9 97020370 9	97/04/01 97/04/01 97/04/01 97/04/01	으 으 ^ ^ <b>&gt;</b> >	ABSENT <10	97020371 97020371 97020371 97020371	97/04/01 97/04/01 97/04/01	_ <u>_ a a</u>	ABSENT ABSENT	1 1 1		97020372 97/04/01 97020372 97/04/01 97020372 97/04/01 97020372 97/04/01	97020372 97/04/01 97020372 97/04/01 97020372 97/04/01 97020372 97/04/01	97020372 97/04/01 d.J 97020372 97/04/01 d.J 97020372 97/04/01 j 97020372 97/04/01	97020372 97/04/01 d.J 97020372 97/04/01 d.J 97020372 97/04/01 j 97020372 97/04/01	97020372 97/04/01 d.J ABSENT 97020373 97020372 97/04/01 d.J ABSENT 97020373 97020372 97/04/01 J <10 97020373 97020372 97/04/01 J <10 97020373	97020372 97/04/01 d.j ABSENT 97020373 97/04/01 97020372 97/04/01 d.j ABSENT 97020373 97/04/01 97020372 97/04/01 j <10 97020373 97/04/01 97020373 97/04/01 97020373 97/04/01	97020372 97/04/01 d.j ABSENT 97020373 97/04/01 97020372 97/04/01 d.j ABSENT 97020373 97/04/01 97020372 97/04/01 j <10 97020373 97/04/01 97020373 97/04/01 97020373 97/04/01	97020372 97/04/01 d.j ABSENT 97020373 97/04/01 97020372 97/04/01 d.j ABSENT 97020373 97/04/01 97020372 97/04/01 j <10 97020373 97/04/01 97020373 97/04/01 97020373 97/04/01	97020372 97/04/01 d.j ABSENT 97020373 97/04/01 97020372 97/04/01 d.j ABSENT 97020373 97/04/01 97020372 97/04/01 j <10 97020373 97/04/01 97020373 97/04/01 97020373 97/04/01	97020372 97/04/01 d.J. ABSENT 97020373 97/04/01 d.k. 97020372 97/04/01 d.J. ABSENT 97020373 97/04/01 d.k. 97020372 97/04/01 J. <10 97020373 97/04/01 k. 97020372 97/04/01 J. <10 97020373 97/04/01 k.	97020372 97/04/01 d.j ABSENT 97020373 97/04/01 97020372 97/04/01 d.j ABSENT 97020373 97/04/01 97020372 97/04/01 j <10 97020373 97/04/01 97020373 97/04/01 97020373 97/04/01
& & &	1,3-Dichlorobenzene	3 3	97020369	1 1 1				97/04/01	-   -   -		97020371	97/04/01		<b>13</b>	1 1 1	97020372	97020372 97/04/01 97020372 97/04/01	97020372 97/04/01 j		j <10	j <10 97020373 j <10 97020373	j <10 97020373 97/04/01 j <10 97020373 97/04/01	j <10 97020373 97/04/01 k	j <10 97020373 97/04/01 k			
£ & &	3,3-Dichlorobenzidine 2,4-Dichlorophenol	8 8 8	97020369 97020369					97/04/01 97/04/01			97020371 97020371	97/04/01	- - -	3 3 3		97020372	97020372 97/04/01 97020372 97/04/01	97020372 97/04/01 j 97020372 97/04/01 j		4 40	4 40	<10   97020373   97/04/01	<10 97020373 97/04/01   k	<10 97020373 97/04/01   k			
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& & &	Di-n-Butylphthalate Di-n-Octylphthalate 4 6-Dinitro-2-Methylphanol	â â â	97020369	97/04/01	 		97020370 9 97020370 9	97/04/01 97/04/01 97/04/01		8 8 8	97020371 97020371	97/04/01 97/04/01	-1-1-	3 3 3	1 1	97020372	97020372 97/04/01 97020372 97/04/01 97020372 97/04/01	97020372 97/04/01 J 97020372 97/04/01 J		3 3 3	j <10 97020373 j <10 97020373	J <10 97020373 97/04/01 J <10 97020373 97/04/01	j <10 97020373 97/04/01 k	J <10 97020373 97/04/01 J <10 97020373 97/04/01	j <10 97020373 97/04/01 k	j <10 97020373 97/04/01 k	j <10 97020373 97/04/01 k
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# DATA SUMMARY FORM SEMI-VOLATILE ORGANICS (cont'd) Wastewater Samples

Date Collected 97/03/27  Method Sample Numbers 97/020311; 321-25; 369;	Detection Tracking Numbers CN970254 & GN970254	Limit	(ug/L) Compound	<5 2,4-Dinitrophenol									L	L	<5 Isophorone	4,4-Methylenedianiline		<5 Naphthalene																								<u></u>	<u>-                                      </u>		
Hed 97/03/2 Hers 970203	ers CN9702	SITE 6	Result	<10'	<b>1</b> 0	â	6	<b>a</b>	â	3 3			â	â	â	â	<b>10</b>	â	<b>10</b>	<10		<10	<b>10 20</b>	10 0 0	20 20 20	40 40 60	410 410 410 410 410 ABSENT	<10 <10 <10 <10 <10 <10 <10 <10 <10 <10	410 410 410 410 410 410 410 410	410 410 410 410 410 410 410 410	410 410 410 410 410 410 410 410 410	410 410 410 410 410 410 410 410 410	410 410 410 410 410 410 410 410	410 410 410 410 410 410 410 410 410	410 410 410 410 410 410 410 410	410 410 410 410 410 410 410 410	410 410 410 410 410 410 410 410	410 410 410 410 410 410 410 410	410 410 410 410 410 410 410 410	410 410 410 410 410 410 410 410	410 410 410 410 410 410 410 410 410	410 410 410 410 410 410 410 410 410 410	410 410 410 410 410 410 410 410 410 410	410 410 410 410 410 410 410 410	410 410 410 410 410 ABSEN
11; 321-25;	54 & GN97	2	NUMBER	97020369	97020369	97020369	97020369	97020369	97020369	9702036	800000E	9/020369	97020369	97020369	97020369	97020369	97020369	97020369	97020369	97020369		97020369	97020369	97020369 97020369 97020369	97020369 97020369 97020369 97020369 97020369	97020369 97020369 97020369 97020369 97020369 97020369	<del></del>	<del></del>	<del></del>	<del></del>	<del>  -   -   -   -   -   -   -   -   -   -</del>	<del></del>	<del>~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~</del>	<del></del>	<del> </del>	<del> </del>	<del></del>	<del>*</del>	<del> </del>	<del></del>	<del>····································</del>	·	<del>──</del> ╄╼ <del>┩╍╃╍┩═╄┈╂═╏╸╟┈┢═┪═┪┉╻┠═┪═</del> ╏╌╏ <del>┉╻╏╸╏╻╸╏╸╻╻╻╻</del> ┸┈╏┈╏┈╏	<del>·····································</del>	<del>▀▘▎▘▀▐▝▀▕▝▀▋▀▘▋▀▀▍▀▐▀░▍▀▐▀▃▍▀▄▙▀▟▃▄▙▄▊▃▐▗▃▐▗▃▐▃▃▐▃▃▐▃▃▊▃▐▃▃▊</del> ▃▐▃▃▋▃▐▃▃▋▃▋▃▋▃▋▃▋▃▊
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970	CN	SIT	O Result	_L			- 43			- 13	- 43	1 <13	1 <13	- 43	- 43	- 43	76.3	- 43	- 43	- 43	- <13		- <13		2 2 2 2	3 3 3 3 3	- 413 - 413 - 413 - 413 ABS	<del>.   .   .   .   .   .   .  </del>	<del>                                     </del>	<del>- - - - - - - - - - - -</del>	<del>-                                      </del>	<del>╎┤╸┤╶┤╶┤╻╎╒╏╌╎╶┤╌┤╸┤</del>	<del>╶╎╶╎╶╎╶╎╶╎╶╎╶╎╶╎╶╎╶╎</del>	<del>┼╸╎╶╎╶╎╶╎╶╎╻╎╻╎╻╏╻╎╶╎╻╎╸╎</del>	<del>┤┤┤┤┤┤┤┤╻╎╻╏╻╏╻╏╻╏╻╏</del>	<del>╼┼╶┠┈┞┈┞┈╏┈┩═┩┈╏╶┩╻╏╒╏╦╏╻┞╒╏</del>	<del>╶┤╸┤╴┤╶┤╶┤╶┤╶┤╻╎╻╏╻┦╻┦╻┦╻┦</del>	<del>╶┤╶┤╸┤╶┤╶┤╶┤╶┤╻╎╻╏╻╏╻╏╻╏╻╏</del>	<del>╶┡</del> ╌┞╌┼╌┼╌┼╌┼╌┼ <del>╶╎</del> ╻╏╒┦╦┦╌┼╌┼╌┼	<del>┍╎╶┩╒┩╒╃╒╃╒╃╒╃╒╃╒╃╒╇╒╇╒╇╒╇╒╇╒╇╒╇╒╇</del>	<del>┤┈╎╶╎┈┤╶┤┈╎╶╎╶╎╶╎╶╎╶╎╶╎╶╎╶╎╶╎</del>	<del>┤┈┤┈╎┈┤┈┤┈┤┈╎┈╎┈╎┈╎┈╎┈</del>	<del>▝▘<del>▝</del>▝▝▘▘▘▘</del>	<del>┼╸╏╶┩┈╏╶╏═╏╒┩╒╏╒╏╒╏╒╏╒╏╒╏╒╏╒╏╒╏╒╏╒╏╒╏╒╏╒╏╒</del> ╏╒┼┼┼┼┼	<del>╅┍╫╒╃╇╇╒╇╇╒╇╇╇╇╇╇╇╇╇╇╇╇╇╇╇╇╇╇╇╇╇╇╇╇╇╇╇╇╇╇</del>
97020315: 342-46: 372-	CN970260 & GN970260	SITE 10		- -	1	L			_	L							4	1									ENT	ENT	RN T	ENT	RNT	ENT	ENT	ENT	ENT	ENT	NT T	ENT	ENT	ENT	ENT	ENT	ENT	ENT	ENT
2.46: 370	GN97026		NE OFF	מבחכחל	97020372 97704701	97020372 97/04/01	9/020372 97/04/01	9/0203/2 97/04/01	9/0203/2 9//04/01	97020372 97/04/01	97020372 97/04/01	97020372 97/04/01	97020372 97/04/01	97020372 97/04/01	97020372 97/04/01	97020372 97/04/01	97020372 97/04/01	97020372 97/04/01	97020372 97/04/01	97020372 97/04/01	97020372 97/04/01	97020372 97/04/01	777777	710070	97020372 97/04/01	97020372 97/04/01 97020372 97/04/01 97020372 97/04/01	97020372 97/04/01 97020372 97/04/01 97020372 97/04/01 97020372 97/04/01 97020372 97/04/01	97020372 97/04/01 97020372 97/04/01 97020372 97/04/01 97020372 97/04/01 97020372 97/04/01 97020372 97/04/01	97020372 97/04/01 97020372 97/04/01 97020372 97/04/01 97020372 97/04/01 97020372 97/04/01 97020372 97/04/01	020372 020372 020372 020372 020372 020372 020372	020372 020372 020372 020372 020372 020372 020372	020372 020372 020372 020372 020372 020372	020372 020372 020372 020372 020372 020372 020372	020372 020372 020372 020372 020372 020372 020372	020372 020372 020372 020372 020372 020372 020372	020372 020372 020372 020372 020372 020372 020372	020372 020372 020372 020372 020372 020372	020372 020372 020372 020372 020372 020372	020372 020372 020372 020372 020372 020372	020372 020372 020372 020372 020372 020372	020372 020372 020372 020372 020372 020372	020372 020372 020372 020372 020372 020372	020372 020372 020372 020372 020372 020372	020372 020372 020372 020372 020372 020372	020372 020372 020372 020372 020372 020372
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97/03/27	CN970261 & GN970261	SITE 11		٦																							1 1 1	NT							<del>-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1</del>	<del></del>	<del></del>		<del></del>	<del>"             </del>	<del></del>	<del></del>	<del></del>	<del></del>	<del>                                     </del>
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## DATA SUMMARY FORM SEMI-VOLATILE ORGANICS (cont'd) Wastewater Samples (ug/L)

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### WHITEMAN PROJECT 17

## DATA SUMMARY FORM SEMI-VOLATILE ORGANICS (cont'd) Wastewater Samples (ug/L)

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																		0.0100	97019256	97019256	97019256	97019256	96761078	201020	97019256	97019256	97019256	97019256	97019256	97019256	9/019256	9/019256	9/019256	96761076	96761076	00781078	00761076	00761076	00761016	96781076	00251016	07010356	07010356	97019256	97019256	NUMBER	Q.		N970215 & GN970215	97019172: 301: 242: 256:	
				-		1											-	01/00/20	97/03/25	97/03/25	97/03/25	97/03/25			97/03/25				97/03/25	97/03/25																Date		,	315	256:	
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																		8CZ810/8	201020	97010250	97019259	97019259	97019259	69761076	60781078	07010050	97019259	97019259	97019259	97019259	97019259	97019259	97019259	97019259	97019259	97019259	97019259	97019259	97019259	97019259	97019259	9/019259	9/019259	65781076		NIMBER	or co (see Comment b)	SITE A (See Composite)	24, 244	104.544	
							İ											97/03/25					97/03/25				07/03/35	97019259 97/03/25	97/03/25	97019259 97/03/25	97/03/25	97019259 97/03/25	97019259 97/03/25	97/03/25	97/03/25	97/03/25		97019259 97/03/25	97/03/25	97/03/25	97/03/25		97/03/25				(d)	218	CN070348 & CN070342	300	
		Ì		Ĺ			İ		İ	İ	İ							-				<b>-</b>	>	ב	>	<u>.</u>				i	n	2	>	3	-	>	>	>	2	2	>	>	>	-	ء	>			:	1	
																		10			2	6	<del>1</del> 0	6	010	l	-		3	â	6	10	â	6	10	<del>1</del> 0	â	â	â	<b>^10</b>	<b>~10</b>	á	10	<b>10</b>	Kosult		SITE 9	CN97021	9/1610/8	97/03/23	
																		97019260	9/019260	00761016	02040260	97019260	97019260	97019260	97019260	09761076	00761076	0200000	07010260	97019260	97019260	97019260	97019260	97019260	97019260	97019260	97019260	97019260	97019260	97019260	97019260	97019260	97019260	97019260	NOMBER	QE.		CN970219 & GN970219	323-329		
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	. <b>-</b> -										Wastew	METALS Wastewater Samples	200			
												(mg/L)				
•	Date Collected 97/03/23	97/03/23			100	97/03/23				97/03/23				7/03/23		
Detection	Tracking Numbers CN970217 & GN970217	CN970217	6 GN97021	7	<u> </u>	70191/1; N970214	97019171; 191; 255; 294-300; 779 CN970214 & GN970214	94-300, 77	!	7019173	97019173; 192; 243; 257; 302-308 CN970216 & GN970216	57; 302-308		7019172	97019172; 301; 242; 256;	, i 9
Limit		SITE 4 (See Comment o)	Comment	0	(0)	ITE 5 (Se	SITE 5 (See Comment q)	ا ق	(0.0	SITE 6	SITE 6	C	s : c	N9/0215	ITE7	
(mg/L) C	Compound	Result	OE NUMBER	Date	٥	Result	OE	Date	0		OE NUMBER	7	2		OE OE	
	Group F	_			_	_				4			+		T C T C T	2
<0.030 Aluminum		0.560	97019193 97/04/02	97/04/02		0.204	97019191 97/04/01	97/04/01	_	0.029	97019192	97/04/02	_	5		
<0.003 Antimony		<b>^</b> 0.003	97019193 97/04/02	97/04/02		0.028	97019191	97/04/01	-		97019192	97/04/02	-	4		
<0.005 Arsenic		ô.005	97019193 97/04/02	97/04/02		0.005	97019191	97/04/01		<0.005	97019192	97/04/02	-	4		
<0.050 Barium		0.063	97019193	97/04/02		0.046	97019191	97/04/01		<0.005	97019192	97/04/02		Z		
<0.001 Beryllium		0.0007	97019193 97/04/02	97/04/02		<0.0005	97019191 97/04/01	97/04/01		<b>^0.0005</b>	97019192	97/04/02		¥		
<0.05 Boron		Z,				Z				N	-		_	¥ !		
<0.001 Cadmium		0.010	97019193 97/04/02	97/04/02		0.029	97019191	97/04/01		0.001	97019192	97/04/02		¥		
<1 Calcium		NT				NT				Z,				¥		
	3	0.014	97019193	97/04/02		0.006	97019191	97/04/01		<0.005	97019192	97/04/02		3		
		<0.025	97019193	97/04/02		<0.025	97019191	97/04/01		<0.025	97019192	97/04/02	L	N.		
40.02 Copper		274		20100102		0.089	97019191 97/04/01	97/04/01		0.024	97019192	97/04/02		NT		
<0.02 Lead		0.042	97019193 97/04/02	97/04/02		0.075	97019191 97/04/01	97/04/01	I	0.116	261610/6	97/04/02		N N		
	m	N N				N	0.0.0	01.0		NT	2012122	2011-0116		בן ד <u>י</u>		
<0.03 Manganese	)S8	NT				N			İ	Z,				NT		
<0.0002 Marcury		<0.0002	97019193 97/04/02	97/04/02		0.0002	97019191	97/04/01		<0.0002	97019192 97/04/02	97/04/02		N	-	
i	num	<0.030	97019193 97/04/02	97/04/02		0.171	97019191 97/04/01	97/04/01	1	<0.030	97019192	97/04/02		Ž		
A Disco	3	0.021	9/019193 9//04/02	97/04/02	-	0.025	97019191 97/04/01	97/04/01		<0.010	97019192 97/04/02	97/04/02		NT		
<0.005 Salanium		5	97019193	97/04/09	•	2008	07040404	07/04/04		200	2010100	2	<u>•  </u>	2		
- 1		ô 005	97019193 97/04/02	97/04/02		0.005	97019191	07/04/04	٥	0.00	76161076	70/10/18		1 2		
- 1		N .		01101101		NT	0,010101	10401	-	NT 000	78181078	20/00/76		2		
- 1	n	0.309	97019193 97/04/02	97/04/02	:	0.792	97019191	97/04/01	Ì	0.304	97019192 97/04/02	97/04/02	-	2		
<0.001 Thallium		ô.001	97019193 97/04/02	97/04/02		¢0.001			Ī	ô.001	97019192	97/04/02		Z		
<0.21 Titanium		<0.025	97019193 97/04/02	97/04/02		<0.025	97019191 97/04/01	97/04/01		<0.025	97019192	97/04/02		Z.		
<0.05 Vanadium	3	N <sub>1</sub>				NT				TI				N.		
<0.05 Zinc		0.293	97019193 97/04/02	97/04/02		0.049		97019191 97/04/01		0.02	97019192 97/04/02	97/04/02		NT		
80:	8015 MOD(AFFF)															
<0.10 mg/L 2(2-Buto	2(2-Butoxyeloxy)Ethanol	N			İ	N				6.1	97019243	97/03/27		<0.1	97019242	97/03/27
Ĺ	Selenium (low recoveries)	53.4%	97019193	97/04/02		24%	97019191	97/04/01		70%	97019192	97/04/02				
Thallium	Thallium (low recovery)															
		•					_	_	$\dagger$							
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<0.0002</p>
 97019194
 970402
 <0.030</p>
 97019194
 970402
 0.424
 97019194
 97/04/02

0.241 s

<0.030

97019195 97/04/02 97019195 97/04/02 1 97019195 97/04/02

<0.0002

Z

Z

0.196 0.006

<0.005

0.006

97019195 97/04/02 97019195 97/04/02

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107

<0.1

97019244 97/03/27

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97019245 97/03/27

25.3% 97019194 97/04/02 2.1% 97019194 97/04/02

9.4%

97019195 97019195

97/04/02 97/04/02

Z

Z

4.97

97019194 97/04/02

0.939 97019195 97/04/02

1.32 97019194 97/04/02 0.002 97019194 97/04/02 0.417 97019194 97/04/02

0.002 97019195 97/04/02 0.003 97019195 97/04/02 0.083 97019195 97/04/02

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Result

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Result SITE 9

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19.8

97019194 97/04/02

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97019194 97/04/02

0.009 97019195 97/04/02

0.083 0.043

0.038

97019195 97/04/02

0.125

0.083 97019194 97/04/02 0.125 97019194 97/04/02 2.45 97019194 97/04/02 106 97019194 97/04/02 0.253 97019194 97/04/02

0.081 97019195 97/04/02 0.169 97019195 97/04/02 29.2 97019195 97/04/02 0.126 97019195 97/04/02

0.015 97019194 97/04/02 0.014 97019194 97/04/02 1.11 97019194 97/04/02 0.0774 97019194 97/04/02

13 97019195 97/04/02 0.01 97019195 97/04/02 0.078 97019195 97/04/02 0.911 97019195 97/04/02 0.039 97019195 97/04/02

SITE 8 (See Comment p)

97/03/23 97019175; 194; 244; 259; 316-322 CN970218 & GN970218

97019176; 323-329; 260; 245; 195 CN970219 & GN970219

97/03/23

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### WHITEMAN PROJECT 17

### DATA SUMMARY FORM COMMENTS

Wastewater Samples page 1 of 1

< - Signifies none detected and the detection limits

ABS S : Absent : SEE COMMENT.

Comment Code

HOLD TIME EXCEEDED.

RECOVERY OF BROMOFORM WAS BELOW ACCEPTABLE LIMITS IN THE LABORATORY FORTIFIED BLANK

OTHER FUEL HYDROCARBONS ARE PRESENT.

SAMPLE SPIKE RECOVERIES ARE LOW DUE TO ORGANIC OR ALKALINE COMPOSITION SELENIUM AND/OR THALLIUM

All pesticides (EPA METHOD 625) were absent qualitatively. Comments for OEHD Sample #: 97019172 POSITIVELY IDENTIFIED VINYL CHLORIDE AT APPROXIMATELY 2.6 UG/L, 1,1,1-TRICHLOROETHANE AT 1.0 UG/L AND TRICHLOROETHENE AT 4.2 UG/L

7.0 Comments for OEHD Sample #: 97019173 POSITIVELY IDENTIFIED M AND/OR P-XYLENE AT APPROXIMATELY 1 UG/L. SAMPLE WAS FOAMY

Comments for OEHD Sample #: 97019174 POSITIVELY IDENTIFIED M AND/OR P-XYLENE AT APPROXIMATELY 1.3 UG/L AND O-XYLENE AT 0.8 UG/L. SAMPLE WAS FOAMY

Comments for OEHD Sample #: 97019255 HEAVY EMULSION. SAMPLE CONTAINED LARGE MOUNTS OF 1-BUTOXY-2-PROPANOL AND 2,2-DIMETHYL PROPANOIC ACID.

Comments for OEHD Sample #: 97019256 SAMPLE CONTAINED A MODERATE AMOUNT OF FUEL (HYDRO-CARBONS C11-C16) AND A LARGE AMOUNT OF SILICIC ACID.

Comments for OEHD Sample #: 97019257 SAMPLE CONTAINED A MODERATE AMOUNT OF JET FUEL (C11-C17), SILICIC ACID, AND SULFUR

Comments for OEHD Sample #: 97019258 SAMPLE CONTAINED A MODERATE AMOUNT OF JET FUEL (C-11-C17) AND SULFUR.

Comments for OEHD Sample #: 97019259 SAMPLE CONTAINED MODERATE AMOUNTS OF FUEL-TYPE HYDROCARBONS, MOST LIKELY JET FUEL

E E O G B Comments for OEHD Sample #: 97019310 (CN970217, SITE 4) TRACE AMOUNTS OF JP-8.

Comments for OEHD Sample #: 97019317 (CN970218, SITE 8) LARGE AMOUNTS OF HYDRAULIC FLUID.

Comments for OEHD Sample #: 97019779 SAMPLE ANALYZED BY CAPILLARY COLUMN GC/MS. SAMPLE CONTAINED N-ALKANES C12-C15 (DODECANE THROUGH PENTADECANE)

SAMPLE MOST CLOSELY RESEMBLED JP-8.

Reviewed By:

Chief, Environmental Chemistry Branch /ICTORIA S. DUNOVANT, Lt Col, USAF, BSC

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# ARMSTRONG LABORATORY

Occupational & Environmental Health Directorate/OEA 2402 E. Drive, Bldg 140 Brooks AFB, Texas 78235-5114 (210) 536-3626, FAX (210) 536-9043

WHITEMAN PROJECT 17 DATA SUMMARY FORM

Wastewater Samples INORGANIC

									m)	(mg/L)			-										
	Date Collected 97/03/24	97/03/24			97/03/24			97/03/24			97	87/03/24			_	97/03/24				97/03/24			
Method	Sample Numbers 97019597; 601; 604; 608; 612-8	97019597	601; 604; 6	508; 612-8	9701959	97019598; 605; 609; 619-25	619-25	9701960	97019600; 607; 611; 633-35	533-35	9	97019751-	751-755; 760; 758-59	8-59		97019599	97019599; 603; 606; 610; 626-631 97019756-57	10, 626-631		37019756-	57		
Detection	Tracking Numbers CN970224 & GN970224	CN97022	& GN9702	24	CN97022	CN970225 & GN970225	25	CN970227	7		ဂ	N970233	CN970233 & GN970233	3		GN970226				GN970234			_!
Limit		SITE 6			SITE 7			SITE 4			S	SITE 17				SITE 13			(2)	SITE 21			- 1
me/L)	Compound	Result	OE Date	Date	D R	OE OE OE	3	Bestille	NI OE		<del>}</del> _		OE D		>		OE		)		OF	-	,
	Group A				_						4				_				4				
					-						_							_					_
÷i0	COD	174	97019612 97/03/26	97/03/26	7.4	97019619	97/03/26	257	97019633 97/03/26	97/03/26		=	97019751	97/03/31		6320	97019626 97/03/26	97/03/26	_	NT			
	Total Organic Carbon	42	97019612 97/03/26	97/03/26	16	97019619 97/03/26	97/03/26	61	97019633 97/03/26	97/03/26	4	47.2	97019751 97/03/31	97/03/31		- 1	97019626 97/03/26	97/03/26	_	Z			į
: !	Group B			,																			1
<b>6</b> 0.3	Oil & Grease	22.4	97019613 97/03/26	97/03/26	5.44	97019620 97/03/26	97/03/26	51.2	97019634 97/03/26	97/03/26	Z.	7				70.4	97019627 97/03/26	97/03/26		54 mg/Bt 9	54 mg/BI 97019756 97/03/27 o	7/03/27	0
HqT 1>	TPH 12.8 97019613 97/03/26 4.72	12.8	97019613	97/03/26		97019620 97/03/26	97/03/26	15.2	97019634 97/03/26	97/03/26	Z	7				2	97019627 97/03/26	97/03/26		N,		<u> </u>	

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Volatile Suspended Solids	Turbidity	Surfactants	Sulfides	Sulfates	Specific Conductance	Silica	Residue, Volatile	Residue, Nonfilterable	Residue, Fillerable	Residue, Settleable	Residue, Total	Langlier Index	Cotor	Chloride	Bromide	Alkalinity, Total	Acidity, Total	Group G	Phenois	Group E	Cyanide, Total	Group D	Phosphorus, Total	Phosphale, Ortho	Nitrate+Nitrite	Kjeldahi Nitrogen	Ammonia	Group C	TPH	Oil & Grease	Group B	Total Organic Carbon	COD	Group A	Compound		Tracking Numbers CN970224 & GN970224	Sample Numbers 97019597; 601; 604; 608; 612-8	Date Collected 97/03/24
7	Z	3.0	0.2	93.5	525	N	S	4	344	<b>6.2</b>	N	N.T	N.	40.2	N	2	N	<u>:                                    </u>	ŝ		<0.005		0.25	0.25	ô.1	4	ô.2		12.8	22.4		42	174		Result	SITE 6	CN97022	97019597	97/03/24
9701961		97019617	9701961	97019617	97019617			97019617	97019617	97019617				97019617			-		97019616		97019615		97019614	97019614	97019614	97019614	97019614		97019613 97/03/26	97019613		97019612	97019612		OE NUMBER		& GN9702	601; 604; 6	
97019617 97/03/26		7 97/03/26	97019618 97/03/27	7 97/03/26	97/03/26			97/03/26	97/03/26	97/03/26		-		97/03/26					97/04/01		97/03/27		97/03/27	97/03/27	97/03/27	97/03/27	97/03/27		97/03/26	97/03/26		97/03/26	97/03/26		Date		24	08; 612-8	
8	Z,	B 1.5	0.3	179.4	771	N,	N,	68	552	a <0.2	NT	I.	N	31.5	Z	Z	N		<b>10</b>	-	<0.005	<u> </u>	1.2	-	0.22	2.5	<b>^0.2</b>		4.72	5.44		<b>1</b> 6	74		Q Result	SITE 7	CN970	97019	97/03/24
97019624		97019624	97019625	97019624	97019624		<u> </u>	97019624	97019624	97019624				97019624					97019623		5 97019622		97019621	97019621	97019621	97019621	97019621		97019620	97019620		97019619	97019619		NUMBER	1	CN970225 & GN970225	97019598; 605; 609; 619-25	*
624 97/03/26		524 97/03/26	325 97/03/28	324 97/03/26	524 97/03/26		<u> </u>	24 97/03/26		24 97/03/26				24 97/03/26					23 97/04/01		22 97/03/27		21 97/03/27	21 97/03/27	21 97/03/27		97/03/27		0 97/03/26	0 97/03/26			9 97/03/26		R Date		0225	9, 619-25	
	NT	B NT	NT NT	6 NT	6 NT	Z	Z,	6 NT		6 a NT	N.T	Z	Z	6 N	Z	N.	N				NI		0.45	0.45	0.1	ۍ ن				51.2			257		Q Result	SITE 4	CN9;	9701	97/03/24
									<u> </u> 				_				 							97019635	97019635	97019635	97019635			97019634		97019633	97019633		OE NUMBER	4	CN970227	97019600; 607; 611; 633-35	1/24
								<u> </u>						_		_								635 97/03/28			635 97/03/28		634 97/03/26	634 97/03/26	,		633 97/03/26		E BER Date			311; 633-35	
			_														_						•	3/28		!	3/28			1/26		j			۵				
2	Z,	ô.1	Z	1.5	အ	NT	3	G	30	0.2	곡	3	N,	5.7	Z	Z	Z		115		0.44		8.7	7.7	8	8.1	7		NT	NT			=		Result	SITE 17	CN970233	97019751-755; 760;	97/03/24
97019755		97019755		97019755	97019755			97019755	97019755	97019755				97019755					97019754		97019753		97019752	97019752	97019752	·• i	97019752				!	i	97019751		OE NUMBER		CN970233 & GN970233	-755, 760, 7	
97/03/26		97/03/26			97/03/26					97/03/26				97/03/26					97/04/01		97/03/27		97/04/04	97/04/04	97/04/04	97/04/04	97/04/04					97/03/31	97/03/31		Date		33	758-59	
496	N	a 8	<0.1	5.5	5900	NT	IN	908	6440	a 1.8	Ŋ	N.T	NT	<1.0	NT	N,	NT		16 <u>4</u>		0.014		198	130	4.3	=	0.8		2	70.4	Ĺ	128	6320	_	Q Result	SITE 13	GN970226	9701959	97/03/24
07010631		97019631	97019632	97019631	97019631			97019631	97019631	97019631				97019631					97019630		97019629		97019628	97019628	97019628	97019628	97019628		97019627	97019627		97019626	97019626		OE		26	97019599; 603; 606; 610; 626-631	
97/03/26			97/03/28		97/03/26					97/03/26				97/03/26					97/04/01	1	97/03/27						97/03/28		97/03/26	97/03/26		97/03/26	97/03/26		Date			610; 626-63	
2	N	a 0.9	Z	NT	N	z	Z	Z,	N.	a N	NT	N T	NT	N.T	Z,	N N	Z		Z,		N.		N.	Z	Z	Z	Z.		Z	54 mg/Bt	1	Z.	N N	-	Result	SITE 21	GN97		97/03/24
-																			-				-	-			-	-		g/Bt 9701	-	-		-		21	GN970234	97019756-57	/24
-		97019757 9															-			_						:	-			97019756 97	-		_		OE NUMBER I				
1		97/03/3		i			į	i																	İ	:				97/03/27					Date				

109

<0.1

ô.10

**602** 

units

1

<10 ug/L

<0.005

<0.2 mL/L

WHITEMAN PROJECT	17							DATA	ra su	SUMMARY	₽ ≺	FORM	Š	-						ı
							-	_	VOLATILE ORGANIC	LE OR	GA :	NICS:	=							
							_		1010010	(ug/L)	mp	es								
	Date Collected 97/03/24	4		97/03	/24		97	97/03/24			╝	ACIEO/LE								1
Meinod Sample Numbers	umbers 970195	97019597; 601; 604; 608; 612-8	608, 612-8	9701	97019598; 605; 609; 619-25	9 619-25	97	019600	97019600; 607; 611; 6	633-35		97019751	97019751-755: 760: 758-50	58.50		97/03/24			i	97/03/24
Limit	SITE 6	SITE 6	.24	CN97	CN970225 & GN970225	0225	<b>₽</b>	CN970227				CN97023	0233 & GN970233	33		GN970226	6	GN970226	1	9701975
		2		6	-	7:	2	SITE 4			1	SITE 17				SITE 13				SITE 21
(ug/L) Compound	Result	NUMBER	Date	Q Result	II NUMBER	R	Q R	Result	OE	3			OE.	,			OE			2116 71
EPA 624 OR 601/602	02	!		1	4	1		4	1	Date	2	Kesuk	NUMBER	Date	٥	Result	NUMBER	Date	۵	Result
<5.0 Benzene	. 6	97019608	97/03/27 b	5,1 6	97019609	9 97/03/26	5   5	-	97010611	70007										
<5.0 Bromodichtoromethane	Ĝ	97019608			97019609	٠.				17/00/21			<u>:</u>	97/03/26		ŝ	97019610	97/03/26	Ď,a	Z.
<5.0 Bromoform	ŝ	97019608	_:		97019609	- 1	_	İ		97/03/27	-		97019760	97/03/26		ŝ	97019610			Z
<5.0 Bromomethane	^5	97019608		<u> </u>	97019609	:	7   E			97/03/27	10			97/03/26		ŝ	97019610			Z
<50 Carbon Tetrachloride	ŝ	97019608			97019609			İ		97/03/27	10	-	97019760	97/03/26		S	97019610			Z
<5.0 Chlorobenzene	6	97019608	- :		97019609		<u> </u>	İ	!	12/50/16	<u> </u>	5	1	97/03/26	ļ	5	97019610			3
:	SN	97019608		ь,r -S	97019609	i	- 1		97019611	12/20176	7   0	α		97/03/26		Ĝ	97019610	97/03/26	b,m	Z.
<u>:</u>	5	97019608	97/03/27 b		97019609			_		97/03/27	7   0	5 6		97/03/26	1	G	97019610	t	3	Z
Ĺ	8.3		1	b,f <5	97019609		ь. -S			97/03/27	<u> </u>		97019760	97/03/26		3	97019610		b,m	Z
	-5	97019608	97/03/27 b	b,f <5	97019609	97/03/26	<u>5</u>			97/03/27	i		!_	07/03/20					b,m	N
<5.0 Uibromochloromethane	. G	•	97/03/27 6,5		97019609	- 1	<u>.5</u>		!	97/03/27	<u>i</u>	<u>څ</u> ا	97019760	97/03/26		À G			E	Z,
<5.0 1 3.Dichlorobenzene	h . ć			<u> </u>	97019609	97/03/26	<u>-</u> -6		97019611	97/03/27	6	1		97/03/26	ĺ	λ (	07010010			٢
	Ĝ.	97019608	97/03/27 5,1	<u> </u>	97019609		<u> </u>		:	97/03/27	^	Ĝ	i	97/03/26			97019610	97/03/26		2 2
	<u>.</u>				97019609		. <u>5</u>		!	97/03/27	<u>.</u>	5.3	97019760	97/03/26	-			_ :_		1
	Ĝ		97/03/27 b.f	G (	97019609			İ		97/03/27	<u> </u>			97/03/26		6			3	Z   2
<5.0 1,1-Dichloroethene	ŝ				97019609	97/03/26	ر م م	-		9//03/27	<u>:</u>	3		97/03/26	<u>i</u>		97019610	:		Z.
<u>:</u>	· -		97/03/27 b.f		97019609		σ ; Δ ; δ	i	- ;	97/03/27	!			97/03/26	!			97/03/26		Z,
<u> </u>	6				97019609					97/03/27	- 0	:		97/03/26	1	. 6				N
į	ŝ	97019608	97/03/27 b,i		97019609	<u>'</u>	<u>ه</u> ا	-	97019611	97/03/27	7   0	-		97/03/26	1		97019610	97/03/26		N
	<u> </u>	97019608	97/03/27 b.f		97019609				. !	97/03/27				97/03/26	1			! .:		N
	Ġ	97019608	97/03/27 b.f	ŝ	97019609	1					!			97/03/26	<u> </u>		97019610	97/03/26	3	¥
		97019608	97/03/27 b,i		97019609			9:		97/03/27	:_			97/03/26	<u>:</u>	6	97019610	<u> </u>		Z
	!		97/03/27 6,1	Ĝ	97019609			9	,	_	A 13	<u>ئ</u> دى	97019760	97/03/26	<u>:</u>	İ			,3 7	, N
!	. 6	<del></del>	97/03/27 b,f	ŝ	97019609	97/03/26	٥. څ	9			!	5		97/03/26	1				3	IN
	. 6		97/03/27 b.f	6	97019609	i	.i. 5	9					:_	97/03/26			_1	_1	3	Z
<5.0 1.1.2-Trichloroethage			97/03/27 b.f		97019609	97/03/26	S.	9	97019611	97/03/27	4			97/03/26	1		97019610	_t		N.
	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \				97019609	97/03/26	b,i <5	9	97019611	97/03/27	5	5.4		97/03/26	!		97019810			Z
<5.0 Trichloroflouromethane	<u>م</u>	97019608			97019609	1	5	9	97019611		6			97/03/26	1	ŝ	97019610	97/03/26		3 2
_	S. S.		_i_		60961076	4	.s	9	97019611	97/03/27	<u>\$</u>		97019760	97/03/26						
<5.0 lo·Xylene	<u> </u>		, i		97019609	4_	b,i 18.8	<u> </u>	97019611	97/03/27	ь 2	20.3		97/03/26	1	$\perp$		97/03/20		3 3
	5		:		60961076	1	b,1 12.1		97019611	97/03/27	=	18.6		97/03/26		<u>ۍ</u>				1
j		0.01000	1,00/2/	UN N	60961076	97/03/26	,i.	9	97019611	97/03/27	5	5.8	:	97/03/26	_					4   =
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## DATA SUMMARY FORM

### SEMI-VOLATILE ORGANICS Wastowater Samples (ug/L)

4.4.DDE 4.4.DDT  Dieldrin  5 Dibenzo(a h) anthracene 5 1,2.Dichlorobenzene 5 1,3.Dichlorobenzene 6 1,4.Dichlorobenzene 7 4.Dichlorobenzene 7 5 1,2.Dichlorobenzene 7 5 1,2.Dichlorobenzene 7 5 1,2.Dichlorobenzene 7 5 1,2.Dichlorobenzene 7 5 1,2.Dichlorobenzene 7 5 1,2.Dichlorobenzene 7 5 2,4.Dichlorophenol 7 5 Diethylphthalate 7 5 1,2.Dimethylphthalate 7 5 1,2.Dimethylphthalate 7 1,2.Dimethylphthalate														4,4-DDE 4,4-DDT Dialdrin	4,4-DDE 4,4-DDT	4,4-DDE		4.4.DDD	<5 Chrysene	4-chlorophenyl Phenyl Elher	<5 2-chlorophenol	<u>.                                      </u>			Confidencyprinialale				AS Big/2 Chicologous		<5 Bis(2-chloro ethoxylmethane	delta-BHC	-	•		<5 Renzo(h)thurranthana	:	Bonzigne	:	<5 Anthracene	i	<5 Acenaphthylene	EPA 625	(ug/L) Compound			Detection	_	
	: .	· ·	· · ·		: . _ : _ :		: . : !								A	A	Þ		^			:	enol	:		yi Emer		:				<b>&gt;</b> :		-			!	:	· ·	: : :: 4	A	<b>^10</b>	25		; ;	SITE 6	(racking Numbers (CN070334 & CN070334 & 612-8	Date Collected 97/03/24	
410 410 10.2	8 8	; <del>2</del>	<u></u>		â	÷	:		â	ŝ	6	:6	!				ABSENT	ABSENT	ŝ	10	ô	â	1	ENT				:	:	:			ž		6		_	!	Z	<u> </u>	ABSENT	_		Result !	-	TF 6	766610	/03/24	
97019597 97019597	97019597			97019597	97019597	97019597	76561078			97019597	97019597	97019597			97019597	97019597	97019597	97019597	97019597	97019597	97019597	97019597	97019597						_:_				97019597		97019597	<del></del>			97019597	97019597	97019597	97019597		NUMBER	0.5	ZOJENIO K	01, 004, 0		
97/03/27	17/50/18		2	97/03/27	97/03/27	97/03/27	17/50/16		97/03/27	97/03/27	97/03/27	97/03/27	12/50//6	0.,00.4	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27	9//03/2/	17150176	97/03/27	07/03/27	97/03/37	97/03/27	07/03/27	07/03/27	07/03/27	9//03/27	97/03/27	97/03/27	97/03/27	<u>:_</u>	97/03/27	97/03/27		Date	-	1	08 612-8		
<u>a</u> 4	4			A .	<u>-</u>	410	010	:	- 1	d ^10	d <10	d <10	d <10	12	2	<u> </u>	d,n AE	d,n AE	d ^10	d <10	d <10	d <10	40	dn ABS	d <10		010	j	1		1 (	2 5				•	d <10	d <10	d,n AB	0 cio	d,n AB	01>	_	Q Re	9	2 2	9/2	97/	
<u> </u>				:				_	:	i				200	ABSENT	SENT	ABSENT	SENT						ENT	-	:				-	-	ABGENT			:		!		ABSENT 9		ABSENT 9			Result	/ 3116	9/0225	19598	97/03/24	
97019598		97019598	20000	97019598	97019598	97019598	97019598	0701000	97019598		97019598	97019598	97019598	1	. 1	1	97019598	d,n ABSENT 97019598	97019598	97019598	97019598	97019598	97019598	97019598	97019598	97019598	97019598	:	:		_ :		i	- 1			97019598		97019598	97019598	97019598	97019598		NUMBER	2	CN9/0225 & GN9/0225	97019598, 605, 609, 619-25		
97/03/27	-	97/03/27	17/00/16	22/03/22	97/03/27	97/03/27	97/03/27	17,00116	07/03/37	97/03/27	97/03/27	97/03/27	97/03/27	17100116	1200110	07/03/37	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27	17/50//8	17100116	9//03/2/	9//03/2/	9//03/2/	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27		Date		5	19-25		
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97010600		97019600	97019000	07010000	97019600	97019600	97019600	0.068076	7010000	,	- 1	97019600	97019600	00961076	0.0001078	20000	97019600	h.n ABSENT 97019600	97019600	97019600		97019600	97019600	97019600	97019600	97019600	97019600	97019600	97019600	97019600	9/019600		<u>.</u>	<u> </u>	•	<u>:</u>	97019600	97019600	97019600		97019600	97019600		NUMBER	3		97019600; 607; 611; 633-35		
07/02/27		97/03/27	17/50/18	70000	97/03/27	97/03/27	97/03/27	9//03/2/	2000	77/1707	97/03/27	97/03/27	97/03/27	97/03/27	17/50/16	270000	45/LU/125	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27		_!_	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27		Date			33-35		(ug/t.)
	1	- 10	1		- ·	<u>^1</u>	1 40			2 .	<b>^10</b>	5	<u> </u>	o A	O A	•		> -	7	<u> </u>	<u>^10</u>	<del>-</del>		j, η A	48.2	- 10	66	1 10	10	<b>10</b>	,n ABS		14.3	<u> </u>	- 6	í á	<b>^10</b>	÷10	,n ABS		n ABS	á		Resu	SITE	CN97	97	97/03	
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	910000	97019599	97019599	9/019599	0,010,00	97019509	97019599	97019599	97019599	SECELO / E	07040500	97019599	97019599	97019599	ABSENT 97019599	97019599	SECRIO16	07010100	07010500	07040600	07010500	07010500	97019599	97019599	97019599	97019599	97019599	97019599	97019599	97019599	97019599	97019599	97019599	97019599	97019599	- 1		97019599	97019599			97019599	Nomber	OE			97019599; 603; 606; 610; 626-631		
	07100727	97/03/27	97/03/27	97/03/27	17/00/16	07/03/27	97/03/27	97/03/27	97/03/27	17/50//8	070007	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27	17/50/16	17100116	17/00/16	17/00/76	12100/16	07/03/57	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27	77/03/27	97/03/27	07/02/27	97/03/27	Date	,			10, 626-6		
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	<5 2,4,6-Trichlorophenol	1	Toxaphene	:	<5 Phenol	<5 Phenanthrene	4-Nilrophenol	;		i	N-Nitrosodi-n-Propylamina	4,4-Melhylenedianiline	<5 Isophorone	:	<5 Hexachlorogihana	į	<5 Hexachlorobenzene			i		5 12.4-Dinit	Compound	Limit	Detection Tracking Nu	Method Sample Nu	Date Collected			WHITEMAN PROJECT 17
	<10	<b>^10</b>	ABSENT	20	<b>1</b> 6	÷	<10	<b>10</b>	ŝ		â â	10	á	â		1	<10	10	ŝ	A 6	100	710	0	SITE 6	Tracking Numbers CN970224 & GN970224		llected 97/03/24		•	7
	97019597	97019597		97019597	9/019597	97019597	97019597	97019597	97019597	97019597	97019597	97019597	97019597	97019597	97019597	97019597	97019597	97019597	97019597	07010607	76061016	NUMBER	OF.		24 & GN970	97: 601: 604:	4			4
		1	!	97/03/27		97/03/27 d	97/03/27 d	<u> </u>	- 1	97/03/27 d	97/03/27	1 3	97/03/27	97/03/27 d	97/03/27	97/03/27	97/03/27	97/03/27	97/03/27	9//03/2/	91103121	-1-			224	608: 612-B				
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		<del>-</del>	97019598	<u>'</u>	<del>'</del>	97019598			97019598					97019598				97019598				1	90		CN970225 & GN970225	605, 600, 6				
	<u> </u>	97/03/27 h	97/03/27 h	97/03/27 h	97/03/27 h	5			97/03/27 h		97/03/27 h		97/03/27 h	<u>.</u>	97/03/27 h			97/03/2/ n		97/03/27 h	97/03/27 h	Date Q			5.60	10 26				
		10	ADSEAT		ô	20		^10 ·				į	10 0					0 0		<b>^10</b>	<b>^10</b>	Result		SITE 4	CKOZOSO	97/03/24		SEMI-	ָ ק	2
	1	97019600 97	- 1	! !			:_	97019600 97	<u> </u>		97019600 97		97019600 97				97019000 97		·	97019600 97	97019600) 97	ER	æ		CN97022		(L	SEMI-VOLATILE ORGAN Wastewater Samples	DATA SUMMARY	
		97/03/2/	1		<del>- i</del>			97/03/27	-		-		97/03/27		T	-  -	97/03/27	Ė	-	97/03/27	97/03/27 j	Date Q					(ug/L)	Wastewater Samples	MMAF	
	<10 97	ENT			į	10 97		į		<10 97		:	<10 97			VO. 7		_	31.4 97	;	<10 97	Result		CN9/0233 & GN9/0233	97019751-755; 760; 758-59	97/03/24			RY FORM	
	97019758 97/0					97019758 97/	_i_			- 6	,	97019758 9//			97019758 97/			<u>i</u>				NUMBER [	2	GN9/0233	5; 760; 758-			CS (cont'd)	M	
	97/03/27 K	S	~	7	7	į.	~	*	~	~	97/03/27 k	1	~	~	97/03/27 k	-	~	*	~	*	×	Date								
	<10 970	Z			410						40 97	<u> </u>			\$10	<u> </u>	<10 97				귀-	Result	SI E 13	GN970226	97019599; 6	97/03/24				•
N. A. A.C. C. L. L.	, ,		<del></del>	97019599 97/		<u> </u>		1 1			97019599 97/	<u>.                                      </u>	•	97019599 97/	_		97019599 97/			97010500 07					97019599; 603; 606; 610; 626-631					•
SI/O3IZI		5	<del>-  </del>	97/03/27	<del></del>	<del>-</del>	97/03/27	-	- -	97/03/27	-   -	-	-	97/03/27	<del> -</del>	-	97/03/27	_	97/03/27	1-	4	-								
	N N	-	<b>X</b>	Y	. N	N.	Z	NT.	3   3	7	×	N,	NT	2 2	Z	Z	N.	X   :	2 2	2	Ē		SITE 21	GN970234	97019756-57	97/03/24				
					-		:		+	-					1	!			-		NUMBER D	_								
		+	<u> </u>	+			:	1	+	-			<u>:</u>			-	-	1	$\perp$		Date Q	_								

### WHITEMAN PROJECT 17

## DATA SUMMARY FORM METALS Wastewater Samples (mg/L)

_	Pate Called 97/03/24	VC/CU/E			10,000																
Method	Sample Numbers 97019597: 601: 604: 608: 612-8	7019597	601: 604: 6	08: 612-8	97019598	97019598: 605: 609: 619-25	10.25	0704060	54	644. 600	ň	97/03/24			97/03/24	124			97/03/24		
š	Tracking Numbers CN970224 & GN970224	N97022	& GN97022	4	CN97022	CN970225 & GN970225	7 0	CNOZOZZ	737	CH02032	90	-19/610/6	64-84/ 09/ 44/14/16/6/	8-59	9701	97019599; 603; 606; 610; 626-631	606; 610;	626-631	97019756-57	57	
		SITE 6			SITE 7			SITE 4	-			SITE 17	17		SITE 13	SITE 13			GN9/0234		
(mg/L) Com	Compound F	Result	NUMBER	Date Q	Result	NUMBER	Date Q			OE D	Date	-	OE		D		<del></del>				
Gro	Group F						_			7	+	4		- -	1,0001	NO MORDEN	-1-	r Cata	Nosuk	NOMBER	Dara
<0.030 Aluminum		0.054	97019604	97/04/01	0.015	97019605	97/04/01	0.092		97019607 97/	97/04/03	0.621	97019759	97/04/03	130	7774		3		-	
<0.003 Anlimony	•	<b>^</b> 0.003	97019604	97/04/01	۵	)	97/04/01	0.003		- 1	97/04/03		97019759	07/04/03	200	$\perp$		970402	1		ŀ
<0.005 Avsenic		<0.005	97019604	97/04/01		ı	97/04/01	<b>^</b> 0.005	٠.	- 1	97/04/03		- 1	07/04/03	0.203			20/10/18	2		
<0.050 Barium		0.037	97019604	97/04/01	0.038		97/04/01	0.038			97/04/03		- 1	97/04/03	3 76		1	20110170	2		
<0.001 Beryllium		<0.0005	97019604 97/04/01	97/04/01	წ		97/04/01	^0.0005	<u>ة ا</u>	- 1	97/04/03		_	27/04/03	2 6			20,0402	2		
<0.05 Boron	_	NT						3		- 1			0.00	27,07,00	1 0000	200000	!	20100118	2		İ
		0.002	97019604	97/04/01	0.002	97019605	97/04/01	0.002	i_	97019607 97/	97/04/03	8	97019759	97/04/03	3 2 3 -	0701	1	}	1 2		
<1 Calcium		NT			i			Z		i_	-	j	- 1	100	1 5	0,01000	- 1	20100116	2		
<0.01 Chromium		<b>^</b> 0.005	97019604	97/04/01	8	97019605	97/04/01	6.005		97019607 97/	97/04/03	9	97019759	97/04/03	0 945		- 1	3	-		
<0.05 Cobalt		<0.025	97019604	97/04/01	<0.025		97/04/01	<0.025	_ :		97/04/03	-		97/04/03	2 9	$\perp$		07/04/02	-	-	ì
<0.02 Copper		0.022	97019604	97/04/01	0.01	97019605	97/04/01	0.029			97/04/03			97/04/03	9 23	97019606		97/04/02	2 2		
L		0.161	97019604	97/04/01	0.394	97019605	97/04/01	0.223		97019607 97/	97/04/03	0.134		97/04/03	30.3			97/04/02	Z		İ
		0.003	97019604 97/04/01	97/04/01	0.005	97019605	97/04/01	0.004		97019607 97/	97/04/03	0.479		97/04/03	6.42	9701		97/04/02	NT		-
1		2			2			3	<u> </u>			3			Z			-	N T		ļ
CO COO Mercus		3 2		2010	N			Z				ZŢ			N				N		
<0.03 Molyhdanim		0.000	97010604	07/04/01	6000		97/04/01	<0.0002		1	97/04/03	╧	97019759	97/04/03	<0.0002	002 97019606		97/04/02	N		Ì
		A0 010		97/04/01	2000		104/01/18	Â.030			97/04/03	1		97/04/03	0.238			97/04/02	NT		
		Z,			N G	0.000	011011	N 100		97019007	50/100/16	2	9/019/59	97/04/03	0.756	6 97019606	:	97/04/02	N.		į
<0.005 Selenium		<b>^</b> 0.005	97019604	97/04/01	c. • 0.005	97019605	97/04/01	c • 60 005		97019607 97/	97/04/03	0 47	07010750	07/04/03	2 2		1		Z		1
<0.01 Silver		<b>^0.005</b>	97019604			1		^0.005		i_	97/04/03	0 008	7019759	07/04/03	0.00	$\perp$	- 1	20/104/02	Z	-	
<1 Sodium		Z			N	,		3			-	-			N C	0,000	1	2011-0116	2 2		
<0.14 Strontium		0.316	97019604	97/04/01	0.48	97019605	97/04/01	٥	0.318 97	97019607 97/	97/04/03	0.417	97019759 97/04/03	97/04/03		177 970	97019606 97/04/02	24/03	1		!
2		<b>\$0.001</b>	97019604	97/04/01	÷0.001	97019605	97/04/01	-0.001	(0)		97/04/03		97019759	97/04/03	6001	+	97019606 97/	97/04/02	2   2		-
<0.21 Titanium		<0.025	97019604	97/04/01	<0.025	97019605	97/04/01	<0.025		97019607 97/	97/04/03	5		97/04/03	1	ᅇ		97/04/02	Z,		-
<0.05 Vanadium		N			N			3				N T			Z	_		-	Z		
8045 M		0.036	97019604	97/04/01	0.029	97019605	97/04/01	0.074		97019607 97/	97/04/03	0.518	97019759	97/04/03	21	9701	97019606 97/	97/04/02	N <sub>T</sub>		
									-							_					İ
<0.10 mg/L 2(2-Butoxyetoxy)Ethanol		6.1	97019601	97/04/02	ô.1	97019602	97/04/02	Z,	-			Z			0.	0.202 970	97019603 97/	97/04/04	T		
C · Celenium /lou		64 79/		20101				-	╀		i										
:	Thallium		0101000	01101101	27.4.F	20061016	10/10/18	26,86	+	9/01960/ 9/	97/04/03				<u> </u>		-				
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								_	+							_					

### WHITEMAN PROJECT 17

### DATA SUMMARY FORM COMMENTS

Wastewater Samples page 1 of 1

SN : SEE COMMENTS < - Signifies none detected and the detection limits.</p>

ABS : Absent

### Comment Code

HOLD TIME EXCEEDED

- OTHER FUEL HYDROCARBONS ARE PRESENT.
- SAMPLE SPIKE RECOVERIES ARE LOW DUE TO ORGANIC OR ALKALINE COMPOSITION FOR SELENIUM AND/OR THALLIUM
- Comments for OEHD Sample #: 97019597 HEAVY EMULSION. SAMPLE CONTAINED SMALL AMOUNT OF FUEL TYPE HYDROCARBONS
- Comments for OEHD Sample #: 97019604 FOR SELENIUM 64.7%
- Comments for OEHD Sample #: 97019608 Comments for OEHD Sample #: 97019608 CHLOROETHANE DETICTED AT APPROXIMATELY 3.9 UG/L. M.P-XYLENES DETECTED AT APROXIMATELY 1.0 UG/L.
- Comments for OEHD Sample #: 97019598 HEAVY EMULSION. SAMPLE CONTAINED SMALL QUANTITY OF JET-TYPE FUEL.
- Comments for OEHD Sample #: 97019609 VINYL CHLORIDE DETECTED AT APROXIMATELY 2 UG/L. TRICHLOROETHYLENE DETECTED AT APROXIMATELY 4 UG/L. OTHER FUEL HYDROCARBONS
- Comments for OEHD Sample #: 97019600 HEAVY EMULSION. SAMPLE CONTAINED SMALL AMOUNTS OF FUEL-TYPE HYDROCARBONS AND SULFUR.
- STANDARD ACENAPHTHENE-D 8) Comments for OEHD Sample #: 97019758 - SAMPLE ALSO CONTAINED APPROXMATELY 142 UG/L OF DIBENZOFURAN (CALCULATED ESTIMATE BASED ON RESPONSE RELATIVE TO INTERNAL

11 /.

- Comments for OEHD Sample #: 97019610 LIMONENE TENTATIVELY IDENTIFY AT 10 UG/L. OTHER FUEL HYDROCARBONS ARE PRESENT. Comments for OEHD Sample #: 97019599 - VERY HEAVY EMULSION. SAMPLE CONTAINED VERY LARGE AMOUNT OF HYDROCARBON COMPOUNDS MOST LIKELY FROM LUBRICATING OIL
- All pesticides ( EPA 625) were absent qualitatively.
- Result is 54 mg/bottle (ERA QC)

Reviewed By:

VICTORIA S. DUNOVANT, Lt Coi, USAF, BSC

Chlef, Environmental Chemistry Branch



# ARMSTRONG LABORATORY

Occupational & Environmental Health Directorate/OEA 2402 E. Drive, Bldg 140 Brooks AFB, Texas 78235-5114 (210) 536-3626, FAX (210) 536-9043

WHITEMAN PROJECT 17
DATA SUMMARY FORM
INORGANIC
Wastewater Samples

115

2 2

Suffictents

9 1.5 NT

97/03/31

**60 60** 

97019847 97019846

97019839 97/03/31 97019839 97/03/31 97019840 97/04/07

NT 527 158.6 <0.1

97019846 1

97/03/31 97/03/31 97/04/07 97/03/31 97/03/31

732 298.6 <0.1 NT

97019853 97019853

97/03/31 97/03/31 97/04/07 97/03/31

97/03/31

97019853 97019853 97019854

949 369.6

97019863 97/03/31 97019863 97/03/31 97019864 97/04/07 97019863 97/03/31

N N N N N N N

97019863 97/03/31

Volatile Suspended Solids

97019839 97019839

97019846

Specific Conductance

### **VHITEMAN PROJECT 17**

## DATA SUMMARY FORM VOLATILE ORGANICS

VOLATILE ORGANICS
Wastewater Samples
(ug/L)

Marie   Composition   Compo	- Data Collector	JULIUNE OF			,							1.3.27											
Tracing Name   COMPANION   CONTROL		9701979	7 807 834	40. 971	0 0	7010707	709: 904: 904	0.40.47		9//03/25	700			97/03/25				97/03/25			97/03/25		
Compound   Compound		CNOZOS	2 001, 004	10, 9/	2 4	76/610/	790, 804, 800	5, 841-847	- 60	97019793	799; 804;	809, 848-85	<u> </u>	9701979	4; 800; 805;	810; 855-57		9701980	1; 858-64		9701979	5: 806: 811	865
Chropound         Chard Octobraz         Chard Octobr		SITE 6			0 0	N5/0225	6770/EAID 0			Seile 10	8 GN9702	30		CN97023	1 & GN9702	31		CN9702	32 & GN970	232	CN9702	49 & GN970	1249
Company   Comp	Compound	20						,				<del>i</del>			OE .			9	OH.		SILE	0,5	
Images   Company   Compa	EPA 624 OR 601/602	1		7			0.0000000000000000000000000000000000000	Caro		Vapus	E NOMBE	┪	1	Result	NUMBER	Date	4—	Result	NUMBER	Date	<u> </u>	NUMBER	? Date
Decimination and bright   Decimination   Company   Decimination   Decimination   Decimination   Decimination   Decimination   Decimination   Decimination   Decimination   Decimination   Decimination   Decimination   Decimination   Decimination	Ben	ŝ	97019807	97/03/28	_		7019808	07/03/38			201020	270000	İ										
Boromateriana   C.   Springer   Service   Se	i	Ĝ	97019807	97/03/28	^	ļ	7019808	97/03/29		$\perp$	60061076	02/20/16	2	6	01861076	97/03/28	ľ	NSR	97019859		Ĝ	97019811	97/03/28
Extractivisticis   Composition   Compositi		ŝ	97019807	97/03/28	1	į	i	97/03/29		3 8	07010000	97/03/20	j	6	01861076	97/03/28	0	NSR	97019859		ŝ	97019811	97/03/28
Checon Franciscondument   C.   Chrosoper		ŝ	97019807	97/03/28	_			97/03/28	. !	3 8	9701909	07/03/20	1	6	01861076	97/03/28	٥	NSR	97019859		ŝ	97019811	97/03/28
Chicacolesterian   4.   2019/007   1000/203   6.   2019/007   2010/203		<u>څ</u>	97019807	97/03/28		j	7019808	97/03/28	<u>i</u>	1	07010900	90000		1 6	01981078	97/03/28	0	NSR	97019859		Ĝ	97019811	97/03/28
Chipsonimin 4 5 0019907 070028 6 0709909		ŝ	97019807	97/03/28			ì	97/03/28	$\perp$		07010000	02/00/70	j	6	01861076	97/03/28	٥	NSR	97019859		Ĝ	97019811	97/03/28
Chabocaninyninyninyninyninyninyninyninynynynyn		ŝ	97019807	97/03/28				97/03/28	_	3	97010900	07/03/20	1	6	01861076	97/03/28	0	NSR	97019859		ŝ	97019811	97/03/28
Chicolorimichima de Strolagio Sindazio Sindazio de Strolagio Sindazio de Strolagio Sindazio de Strolagio Sindazio de Strolagio Sindazio de Strolagio Sindazio de Strolagio Sindazio de Strolagio Sindazio de Strolagio Sindazio de Strolagio Sindazio Sindazio de Strolagio Sindazio de Strolagio Sindazio de Strolagio Sindazio de Strola		ŝ	97019807	97/03/28	^		7019808	97/03/28	_	2	97019809	97/03/38		h   6	97019010	97/03/20	ļ	NSK	97019859		ŝ	97019811	97/03/28
Disconotionems		5	97019807	97/03/28	^		37019808	97/03/28		3	97019909	07/03/36	!	h   ć	97019010	97/03/28	<u>i</u>	NSR	97019859		5	97019811	97/03/28
1.2. Dictionomentame		<u>\$</u>	97019807	97/03/28	^		37019808	97/03/28		3	97019809	07/07/20	Ĺ	4	01061076	97/03/28	i	NSR	97019859		ŝ	97019811	97/03/28
1.2. Cylichochemicane   4.5 97(19907) 97(20/228   5.5 97(19908) 97(20/228   6.5 97(19908) 97(2		ŝ	97019807	97/03/28	1		97019808	97/03/28	i	200	97019809	97/03/28	<u>. i</u>	3   6	07010910	07/03/20	<u> </u>	NSX	97019859		ŝ	97019811	97/03/28
1.1.Dichicochanera	1-4	Ĝ	97019807	97/03/28	_		1	97/03/28		8	97019809	97/03/28	5	5	97019810	07/03/20		NO.	65861076		Ĝ	97019811	
1.1. Obcinicionismon   4.5 97019807 9700228   5.5 97019806 9770028   7.0 97019807 97700228   7.0 970	 	Ĝ	97019807	97/03/28	^			97/03/28		1	97019809	97/03/28	5	5	97019810	07/03/50	9	-	SCORIO/R		Ĝ	97019811	97/03/28
1.1. Dictivionishima   C. S. Priliseri   Stringer   C. S. Priliseri   Stringer   C. S. Priliseri   Stringer   C. S. Priliseri   C. S. Pr	<u> </u>	S	97019807	97/03/28	Δ.		97019808	97/03/28	i		97019809	97/03/28	5	<u> </u>	97019810	97/03/28	2   0	j	97019850		h G	97019811	
1.1 Delicirocenhame   4. 97019907   9703228   4. 97019909   970328   4. 97019909   970328   6. 97019909   970328	<del> </del>	ŝ	97019807	97/03/28			97019808	97/03/28	<u>i</u>		97019809	97/03/28	5	3	97019810	97/03/29	7		07010050		. 0	11861076	<u>:</u>
Fig. 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,	<u> </u>	6	97019807	97/03/28	i i		97019808	97/03/28			97019809	97/03/28	=	ŝ	97019810	97/03/28	0	-	97019859		h   6	9701981	ł
Libralin   Abditionophame   Abdition   Abd		ŝ	97019807	97/03/28		!	97019808	97/03/28			97019809	97/03/28	2	ŝ	97019810	97/03/28		NSR	97019859		h 6	11061076	- 1
cir.1.3.Dichloropropene         c5         97019807         970328         c5         97019809		· . 6	97019807	97/03/28			97019808	97/03/28	<u> </u>	İ	97019809	97/03/28	5	\$	97019810	97/03/28	- 1	NSR :	97019859		S (	97019811	
Internal Schrichtopropens   6   97019907   9703228   6   97019907   9	Ĺ	h 6	10061076	97/03/28			97019808	97/03/28	<u> </u>	100	97019809	97/03/28	2	5	97019810	97/03/28		NSR	97019859		ŝ	97019811	
Ethylbencenne   CS   97019807   9703228   CS   97019807   9703228   CS   97019807   9703228   CS   97019807   9703228   CS   97019807   9703228   CS   97019807   9703228   CS   97019807   9703228   CS   97019808   9703228   CS   97019808   9703228   CS   97019809   9703228		3 6	97019807	07/03/38	+		9/019000	97/03/28		100	97019809	97/03/28	2	6	97019810	97/03/28		NSR	97019859		ŝ	97019811	- 1
Methylene Chloride		6	97019807	97/03/28		_	27019808	97/03/28	1	3 8	07040000	97/00/20	1 3	5 0	018610/6	97/03/28		NSR	97019859		ŝ	97019811	1
1.1.2.2.Telsachiocesihane		ŝ	97019807	97/03/28			97019808	97/03/28	i_	3	97010900	07/07/08	1 =	'n	01061076	97/03/28		NSR	97019859		Ĝ	97019811	97/03/28
Teleachiocelhene   4.5   97019807   9710328   4.5   97019808   9710328   m   4100   9710328   m   4.5   97019809   9710328		ŝ	97019807	97/03/28	<u> </u>		-	97/03/28	Ì	2	97019809	97/03/28	3	<u>ئ</u> رۇ	07010910	07/03/20	Ĺ	No	9/019859		ŝ	97019811	97/03/28
Toluene   C5   97019807   9703728   C5   97019808   970328   C5   97019801   970328   C5   97019811   1.1.1-Tricicitorioethane   C5   97019807   9703728   C5   97019808   970328   C5   97019801   970328   C5   97019801   970328   C5   97019801   970328   C5   97019801   970328   C5   97019801   970328   C5   97019801   970328   C5   97019801   970328   C5   97019801   970328   C5   97019801   970328   C5   97019801   970328   C5   97019801   970328   C5   97019801   970328   C5   97019801   970328   C5   97019801   970328   C5   97019801   970328   C5   97019811   970328   C5   97019811   970328   C5   97019801   970328   C5   97019801   970328   C5   97019811	<u>i</u>	ŝ	97019807	97/03/28	•			97/03/28	_	8	97019809	97/03/28	5 :	2 (	97010910	07/03/20	j	Non	6C061076		G	97019811	97/03/28
1.1.1 Trichloroeithane   4.5   97019807   9703728   4.5   97019808   9703728   4.5   97019808   9703728   4.5   97019808   9703728   4.5   97019808   9703728   4.5   97019808   9703728   4.5   97019808   9703728   4.5   97019808   9703728   4.5   97019809   9703	Ļ	Ĝ	97019807	97/03/28	^		97019808	97/03/28		<b>1</b> 00	97019809	97/03/28	<b>2</b>	Ĝ	97019810	97/07/28	!	No.	97019099		, G	97019811	
1.1.2-Trichloroeilhane   45   97019807   9703/28   45   97019808   9703/28   6.   97019808   9703/28   6.   97019808   9703/28   6.   97019808   9703/28   6.   97019808   9703/28   6.   97019808   9703/28   6.   97019808   9703/28   6.   97019808   9703/28   6.   97019808   9703/28   6.   97019808   9703/28   6.   97019809   9	<u> </u>	ŝ	97019807	97/03/28	^		97019808	97/03/28		<u>â</u>	97019809	97/03/28	>	ŝ	97019810	97/03/28	7	No.	07040050		ó	11961076	<u> </u>
Trickloroelhane         <5         97019807         97/03/28         6.         97019808         97/03/28         m         4100         97/03/28         n         <5         97/019809         97/03/28         o         57/019810         97/03/28         o         97/019809         97/03/28         n         <5         97/019809         97/03/28         n         <5         97/019809         97/03/28         n         <5         97/019809         97/03/28         n         <5         97/019809         97/03/28         n         <5         97/019809         97/03/28         n         <5         97/019809         97/03/28         n         <5         97/019809         97/03/28         n         <5         97/019809         97/03/28         n         <5         97/019809         97/03/28         n         <5         97/019809         97/03/28         n         <5         97/019809         97/03/28         n         <5         97/019809         97/03/28         n         <5         97/019809         97/03/28         n         <5         97/019809         97/03/28         n         <5         97/019809         97/03/28         n         <5         97/019809         97/03/28         n         <5         97/019809         97/03	1	6	97019807	97/03/28	_		97019808	97/03/28		<u>1</u> 00	97019809	97/03/28	3	S .	97019810	97/03/28	1	NS S	97019859		h G	9/019811	
	1	6	97019807	97/03/28	. 60		;	97/03/28		<b>^100</b>	97019809	97/03/28	2	ŝ	97019810	97/03/28	_ 1	NSR	97019859		3 6	07010911	
O-Xylene   C-5   O-Xylene   O-Xylene   C-5   O-Xylene	i	h S	97019807	97/03/28			97019808	97/03/28		100	97019809	97/03/28	3	6	97019810	97/03/28	0	NSR	97019859		ŝ	97019811	
Vinyl Chloride <5 97019807 97/03/28 <5 97019808 97/03/28 m <100 97/03/28 m <100 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/28 n <5 97/03/	1	3 6	07010807	02/00/20			BOBELO/6	97/03/28	<u> </u>	100	97019809	97/03/28	3	Ĝ	97019810	97/03/28	٥	NSR	97019859		ŝ	97019811	
1		5 6	97019807	02/00/20			-	97/03/28	i	L	60861076	97/03/28	3	\$	97019810	97/03/26	<u> </u>	NSR	97019859		Ĝ	97019811	!
			0,000,	07700760	-		1.	97/03/20	i	i	60861076	97/03/28	13	5	97019810	97/03/26		NSR	97019859		ŝ	97019811	!
	77.00									-			İ				İ						<u> </u>
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### **VHITEMAN PROJECT 17**

## DATA SUMMARY FORM

### SEMI-VOLATILE ORGANICS Wastewater Samples

(ug/L)

ō		97019795	ВІТ			NT	0	97/03/28	97019794	<10	- 8	93 97/03/28	97019793	â	8   6	97/03/28	26/810/8	ê	٥	187/03/28	18/610/8	â	4,5-Unitro-2-Methylphenol	ŝ
0		97019795	ВІТ			NT	0	_	97019794	â	18	1	97019793	ê	_	97/03/28	97019792	â			9/019/91	â	Ci-n-Octylphinalale	ŝ
σ		97019795	BIT	<u> </u>		N,	0	97/03/28	97019794	â	18	_	97019793	ŝ	6	97/03/28	76/610/6	Ô	╙	┸	16/610/8	á	Ci-ti-bulyipminarare	. 6
0		97019795	BIT			NT.	0	<u>i</u>	97019794	3	100		9/019/93	lê	0	9//03/28	76/610/6	1	1		97019791	3 8	Din But John Halate	<u> </u>
0		97019795	E .	-		2	- 6	97/03/76	97019794	ź	16	<u> </u>	200	1	10	00000	07040703	5		. !	07010701	3	Dimethylobladate	<u>ک</u>
	:	64,610,6	1 -	:	:	1 2		07/03/20	97019794	<u> </u>	ة <sub>ا</sub> قد		97019793	<u> </u>	ا ا : ف	97/03/28	97019792	<u> </u>			97019791	â	2,4-Dimethylphenol	ŝ
		97019795	1 :=	-		1	; ;	07/03/38	97019794	5.	P	- 1	97019793	â		97/03/28	97019792	â		97/03/28	97019791	<b>10</b>	Diethylphthalate	<b>&amp;</b> :
, ,		07010705		-		2	=	97/03/29	97019794	<u> </u>	B	_!	97019793	â		97/03/28	97019792	á	۵	97/03/28	97019791	â	2,4-Dichlorophenol	ŝ
<b>5</b>   1		97019795	P			Z	0	97/03/28	97019794	6	œ <u>;</u> <del>-</del> ;	<u>i</u>	97019793	â	0	97/03/28	97019792	â		97/03/28	97019791	Ŷ10	3,3-Dichtorobenzidine	G
<del>-</del> !	1	97019795	BT	_		Y.	9	97/03/28	97019794	10	8	93 97/03/28	97019793	â	0	97/03/28	97019792	ô	۵	97/03/28	97019791	â	1,4-Dichlorobenzene	<u>ራ</u>
o !		97019795	BT	1		¥	0	97/03/28	97019794	â	~	93 97/03/28	97019793	â	6	97/03/28	97019792	â	<u>a</u>	97/03/28	97019791	ŝ	1,3-Dichlorobenzene	6
σ.		97019795	BI <b>T</b>			N,	60	97/03/28	97019794	á	-	93 97/03/28	97019793	á	0	97/03/28	97019792	<b>&lt;10</b>	۵	97/03/28	97019791	â	1,2-Dichlorobenzene	Ĝ
6		97019795	ВІТ			NT.		97/03/28	97019794	â	8	93 97/03/28	97019793	10	6	97/03/28	97019792	10	1	97/03/28	97019791	- 60	Dibenzo(a,h)anthracene	· &
σ		97019795	вт		ethod 608	See EPA method 608	0,0	97/03/28	T 97019794	ABSENT	.c.	93 97/03/28	NT 97019793	ABSENT	C,0	97/03/28		ABSENT	C	97/03/28	ABSENT 9/019/91	ABSEN	CIBIOTIS	
σ		97019795	ВІТ		elhod 608	See EPA melhod 608	6	97/03/28	197019794	ABSENT	6	97/03/28	NT 97019793	ABSENT	C,e	97/03/28		ABSENT	c,d	97/03/28	T 97019791	ABSENT	4,4-DDT	
0		97019795	ВТ		ethod 608	See EPA method 608		97/03/28	ABSENT 97019794	<u> </u>	C.	97/03/28	NT 97019793	<u> </u>	C,0	97/03/28	ABSENT 97019792	ABSENT	0,0	97/03/28	18/019/91	ABSENT	4,4-UUE	
σ		97019795	BIT		elhod 608	See EPA melhod 608	င့္မ	97/03/28	197019794	ABSENT	5	97/03/28	NT 97019793	ABSENT	, c	97/03/28	97019792	ABSENT	c,d	97/03/28	T 97019791	ABSENT	4,4-000	
σ.		97019795	118			N.T	, <b>CO</b>	97/03/28	97019794	410	1 5	97/03/28	97019793	â	0	97/03/28	97019792	30		97/03/28		â	Chrysene	Ĝ
σ		97019795	817			F	0	97/03/28	97019794	<b>^10</b>	15	97/03/28	97019793	10	Ф	97/03/28	97019792	-10	1	97/03/28	97019791	î	4-chlorophenyl Phenyl Ether	. 3
σ		97019795	BIT			Z	6	97/03/28	97019794	â	17	97/03/28	97019793	40	6	97/03/28	9/019/92	010	۵	97/03/28	16/610/6	ê	z-chiorophenoi	6
σ		97019795	BIT			NT.	6	97/03/28	97019794	â	100	97/03/28	97019793	â	0	97/03/28	26/610/6	90	1	97/03/28	16/610/8	á	Z-Callororiaphinialaria	h : 6
σ		97019795	ВІТ		-	NT	60	97/03/28	97019794	â	1-		9/019/93	â	0	9//03/28	76/610/6	10	į	9//03/20	16/610/6	; é	a blosopphibolop	h i d
0		97019795	BIT		elhod 608	See EPA method 608	6,0	97/03/28		ABSENI		1	ABSENT STOTES	7000	, c	02/00/10	07010702	200		07/03/20		5	4 chloro-3 methyl Phenol	3
ļ		66/610/6		1			t	20000		200	_!	- !	0704070	ABOEA	1	07/03/38	97019792	ARSENT		97/03/58		ABSENT	Chlordane	į
r 1 e		07010705	0	-		Z .		97/07/70	97019794	3	-	ł	97019793	â	0	97/03/28	97019792	6	α.	97/03/28	97019791	<b>1</b> 0	Bulylbenzylphthalate	ŝ
<del>-</del> -	!	97019795	RIT	-		Z	:	97/03/28	97019794	<del>2</del>	-	1	97019793	â	0	97/03/28	97019792	ô	۵	97/03/28	97019791	â	4-Bromophenyl Phenyl Ether	ŝ
y		97019795	ВІТ			NT	i	97/03/28	97019794	28.6	-	- 1	97019793	538	•	97/03/28	97019792	<del>1</del> 0	۵	97/03/28	97019791	10	Bis(2-ethylhexyl)phthalate	Ĝ
<b>-</b>		97019795	BIT			21	0	- 1	97019794	á	-	į	97019793	â	0	97/03/28	97019792	â	۵	97/03/28	97019791	ô	Bis(2-chloroisopropyl)ether	
J .		97019795	ВІТ	-		3 		ı	97019794	â	-	3 97/03/28	97019793	<10	0	97/03/28	97019792	<del>10</del>	α.	97/03/28	97019791	10	Bis(2-chloro ethyl)ether	ß
σ		97019795	ВІТ			NT		97/03/28	97019794	10	_	3 97/03/28	97019793	<del>10</del>	8	97/03/28	97019792	10	۵	97/03/28	97019791	6	Bis(2-chloro elhoxy)melhane	5
<b>.</b>		97019795	BIT		othod 608	See EPA method 608		97/03/28	ABSENT 97019794	ABSEN	٠	3 97/03/28	T 97019793	ABSENT	C, <b>0</b>	97/03/28	97019792	ABSENT	c,d	97/03/28	97019791	ABSENT	della-BHC	
<b>-</b>		97019795			91hod 608	See EPA method 608	0	97/03/28	ABSENT 97019794	ABSEN	2	3 97/03/28	17 97019793	ABSENT	0,0	97/03/28	97019792	ABSENT	i.c	97/03/28		ABSENT	beta-BHC	
σ		97019795	ПВ			N.		97/03/28	97019794	â	-	3 97/03/28	97019793	â	0	97/03/28	97019792	10	1	97/03/28		â	Benzo(k)lluoranlhene	6
σ.		97019795	BIT			NT		97/03/28	97019794	10	-	3 97/03/28	97019793	6	6	97/03/28	97019792	40	۵	97/03/28	97019791	<b>^10</b>	Benzo(g.h.i)perylene	. : <b>.</b>
σ		97019795	ВІТ			NT.		97/03/28	97019794	â	-	3 97/03/28	97019793	â	0	97/03/28	97019792	10	۵	97/03/26	97019791	<b>16</b>	Benzo(b)/luoranthene	3
Б		97019795		_		¥.		97/03/28	97019794	<10	-	3 97/03/28	97019793	10	6	97/03/28	97019792	÷0	۵	97/03/28	97019791	6	Benzo(a)pyrene	ŝ
<del>o</del>		97019795		1		Z		97/03/28	97019794	â	-	3 97/03/28	97019793	<10	0	97/03/28	97019792	6	۵	97/03/28	97019791	á	Benzo(a)anlhracene	ŝ
σ .		97019795				Y Y		97/03/28		â	-	3 97/03/28	97019793	10	•	97/03/28	97019792	10	۵	97/03/28	97019791	â	Benzidine	ŝ
o ;		97019795		1	Nhod 608	See EPA method 608	0	97/03/28		ABSENT	<u>.</u>			ABSENT	с, е	97/03/28	97019792	ABSENT	<u>6</u>	97/03/28	97019791	ABSENT	Aroclor 1260	
σ!		97019795		1		NT		97/03/28	97019794	á	-			<10	0	97/03/28	97019792	3	۵	97/03/28	97019791	<b>10</b>	Anthracene	ŝ
σ		97019795			thod 608	See EPA method 608	•	97/03/28		ABSENT	2	3 97/03/28		ABSENT	С, 8	97/03/28	97019792	ABSENT	c,d	97/03/28	97019791	ABSENT	Aldrin	
<i>-</i>		97019795				Y	-	97/03/28	97019794	<b>10</b>	-	3 97/03/28	97019793	<del>1</del> 0	٥	97/03/28	97019792	<b>10</b>	<u>a</u>	97/03/28	97019791	â	Acenaphthylene	ŝ
<b>-</b>		97019795	BIT	1		NT	0	97/03/28	97019794	10	-	3 97/03/28	97019793	<del>(10</del>	0	97/03/28	97019792	<b>10</b>	۵	97/03/28	97019791	<b>10</b>	Acenaphihene	ŝ
1					1	-	IL				1												EPA 625	
0	Date	OE NUMBER	Result	٥	OE NUMBER Dale	Result	۵	Date .	OE NUMBER	Result	۵	R Date	OE NUMBER	Result	۵	ર Date	OE NUMBER	Result	Q	Date	NUMBER	Result	Compound	19/L)
		1	Site 8	9		Site 9	60			Site 12				Site 10	_	1		Site 7				Site 6		Đ.
ļ	9	CN970249 & GN970249	CN970249	_	GN970232	CN970232 & GN970232		31	CN970231 & GN970231	CN97023		2230	CN970230 & GN970230	CN9702		9	CN970229 & GN970229	N970229		28	8 & GN9702	CN97022	Tracking Numbers CN970228 & GN970228	election
	й	97019795; 806; 811; 865	97019795	<sub>10</sub>	58-64	97019801; 858-64	9	110; 855-57	97019794; 800; 805; 810; 855-57	9701979	54	809, 848-8	33, 799, 804	9701971	_	8; 841-847	97019792; 798; 804; 808; 841-847	7019792		0.971	97019797; 807; 834-40; 971	97019797	Sample Numbers	thod
			97/03/25	9		97/03/25	8			97/03/25		97/03/25	5	97/03/2	-			97/03/25	1			97/03/25	Date Collected 97/03/25	

### **VHITEMAN PROJECT 17**

## DATA SUMMARY FORM

## SEMI-VOLATILE ORGANICS (cont'd) Wastewater Samples

(ug/L)

	Date Collected 97/03/25	97/03/25				97/03/25				97/03/25			ı	97/03/25				97/07/26			2			
ethod	Sample Numbers 97019797; 807; 834-40; 971	9701979	7; 807; 834-	40, 971		97019792	97019792; 798; 804; 808; 841-847	3, 841-847		9701979	97019793; 799; 804; 809; 848-854	909; 848-85	4	9701979	97019794; 800; 805; 810; 855-57	10: 855-57		97019801: 858-64	858-64		9701979	705. 906. 9	14.005	
etection	Tracking Numbers CN970228 & GN970228	CN97022	8 & GN970	228	į	CN97022	CN970229 & GN970229			CN97023	CN970230 & GN970230	30		CN97023	CN970231 & GN970231	3		CN97023	CN970232 & GN970232	730	CNOT	CN970349 & CN070349	11, 000	
31		Site 6	2		-	Site 7			]	Site 10				Site 12				Site 9			Site 8	Site 8	647011	
ig/L)	Compound	Results	NUMBER	Date	۵	Result	OE NUMBER	Date	0	Result	NIMBER OE	2	>	2	OE C	,			ዶ			OE.		_!
\$	2,4-Dinitrophenol	<10	97019791	97/03/28	<u> </u>	<b>10</b>	97019792	ဖ		â	97019793	97/03/28	1	×10	0701070A	Date	Ŀ	Kesuit	NUMBER	Date	Q Result	<u> </u> _	ER Date	٥
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### APPENDIX D

17 March 1997 Whiteman AFB, Missouri Industrial Wastewater System Characterization Survey DEFOAMER WAFB MSDS

### **MATERIAL SAFETY DATA SHEET**

Effective Date: July 22, 1996

### DEFOAMER WAFR

Product Name:

**DEFOAMER WAFB** 

MANUFACTURER:

G.S. Robins & Company

126 Chouteau Avenue St. Louis, MO 63102 Ph# (314) 621-5155

EMERGENCY PHONE NUMBER:

CHEMTREC:

(800)424-9300

CAS Registry Numb 4: Mixture

TSCA Inventory Nu iber: 9016-45-9, 64741-44-2

CAS Number Component Percent OSHA PEL **ACCIH TLV** Mineral Seal Oil 64741-44-2 80 % 400 PPM TWA 400 PPM TWA Alkylphenol Ethoxy tte 9016-45-9 None 20 %

**EMERGENCY ON ERVIEW:** 

Caution! Harmful if inhaled and may cause delayed lung injury. Can cause nervous system depression. Aspiration hazard if swallowed - can enter lungs and cause damage. Keep away from heat and flame. Avoid breathing vapor. Use ventilation adequate to keep vapor below recommended exposure limits. Avoid contact with eyes, skin and clothing. Wash thoroughly after handling.

POTENTIAL HEA JTH EFFECTS:

Inhalation:

Headache, nasal and respiratory irritation, nausea, drowsiness, breathlessness, fatigue,

central nervous system depression, convulsions, and loss of consciousness.

Eve Contac:

Irritation experienced as mild discomfort and seen as slight excess redness of the eye.

Skin Conta t:

May cause irritation. Prolonged exposure may cause dermatitis.

Ingestion:

Aspiration hazard, headache, nausea, diarrhea, drowsiness, fatigue, pneumonitis, pulmonary edema, central nervous system depression, convulsions and loss of

CORRECTORISTICS.

Cancer:

Not considered a carcinogen.

Inhalation:

If irritation, headache, nausea, or drowniness occurs, remove to fresh air. If breathing has stopped, perform artificial respiration. Get medical attention if breathing becomes difficult or respiratory

irritation persists.

Eve Contact:

Immediately flush eyes with plenty of water for a minimum of 15 minutes. Hold eyelids apart

Skin Contact:

while flushing to rinse entire surface of eye and lids with water. Get medical attention. If clothing soaked, immediately remove clothing and wash skin with soap and water. launder

clothing before wearing. Get medical attention promptly.

Ingestion:

Call a physician immediately. ONLY induce vomiting at the instruction of a physician. Never give

anything by mouth to an unconscious person.

### MATERIAL SAFETY DATA SHEET

No data is available or blended product.

No data is available or blended product.

Disposal Guidance:

Utilize licensed waste disposal company. Consider recycling or incineration. Utilize permitted hazardous waste disposal site or industrial waste disposal site as appropriate.

DOT Hazardous M terial Classification: Defoamer WAFB is not a US Department of Transportation (DOT) Hazardous Mater al.

DOT Hazardous St. stance Classification: Defoamer WAFB is not a DOT Hazardous Substance.

TSCA No.: Com onents of Defoamer WAFB appear on the EPA TSCA inventory list.

RCRA: Defo mer WAFB is not listed as a hazardous waste under any sections of the Resource Conservation and

Rece ery Act or regulations (40 CFR 261 et seq.).

Superfund: CER LA/SARA. Not listed under CERCLA (the Comprehensive Environmental Response Compensation

and inbility Act) or its 1986 amendments, SARA, (the Superfund Amendments and Reauthorization Act), including substances listed under Section 313 of SARA, Toxic Chemicals, 42 USC 11023, 40 CFR 372.65; Section 302 of SARA, Extremely Hazardous Substances, 42 USC 11002, 40 CFR 355; or the CERCLA

Hazz dons Substances list, 42 USC 9604, 40 CFR 302.

IARC: The international Agency for Research on Cancer (of the World Health Organization) does not list or

cates wize the components of Defoamer WAFB as a carcinogea.

NTP Annual Report in Carcinogens: Not listed

OSHA Carcinosea: Not listed

National Fire Prote tion Association (NFPA) Classification:

Heat 1 1
Flan nability 2
Reac vity 0

Reac vity 0

Hazardous Materis s Information Systems (HMIS):

Blue (Acute Health) 1
Red: Flammability) 2
Yelk #: (Reactivity) 0

THE INFORMATION, DATA AND RECOMMENDATIONS
CON MINED HEREIN ARE BELIEVED TO BE
ACC TRATE. G.S. ROBINS AND COMPANY MAKES NO
WAI MANTY OF ANY KIND AND DISCLAIMS ALL

LIAI TLITY FROM RELIANCE THEREON.

DEFOAMER WAFB

G.S. Robius & Company -Page -3

### MATERIAL SAFETY DATA SHEET

Flash Point:

260°F TCC

Autoignition Tempe sture:

490°F (estimated)

Flammable Limits:

Upper - 6 (estimated)

Lower - 0.7 (estimated)

Extinguishing Medi:

Carbon dioxide, dry chemical, or foam. Water stream may spread fire, use water spray only to cool

containers exposed to fire. If leak or spill has not ignited, use water spray to disperse the vapors.

Fire and Explosion | azards:

Can form combustible mixtures with air when heated.

Hazardous Decompe attion Products:

Incomplete combustion can yield carbon monoxide and various hydrocarbons.

General:

Evacuate area and remove ignition sources. Build dike to contain flow. Remove free liquid, do not flush to sewer or open water. Pick up with inert absorbent and place in closed container for

disposal.

General:

Do not store with strong oxidizers. Store as OSHA Class IIIB combustible liquid.

Engineering Contro

Use local or dilution ventilation to keep airborne concentrations below 400 PPM. Loading.

unloading, tank ganging, etc., remain upwind.

Personal Protection:

Where airborne concentrations are expected to exceed exposure limits, NIOSH/MSHA certified respirators must be used. Use safety glasses, chemical goggles or face shield as appropriate. Use

nitrile, or neoprene gloves.

Clear, slightly yellow Appearance:

Specific Gravity: 0.852

Reid Vapor Pressu : @ 100°F:

estimate less than 0.1 pound

Solubility in Water

Dispersible

Melting Point:

20°

Viscosity:

3.7 cs @ 100°F

**Beiling Point**:

475° - 610°F

Flash Point:

260°F TCC

Defoamer WAFB is a stable product

Hazardous Decompy ation Products:

Incomplete combustion can yield carbon monoxide and various hydrocarbons.

Toxic levels of carbon monoxide, carbon dioxide, irritating aldehydes and ketones may be formed

on burning. Heating in air may produce irritating aldehydes, acids, and ketones.

Hazardous Polymeri ation:

Will not occur.

DEFOAMER WAFB

G.S. Robins & Company -Page -2

### APPENDIX E

Whiteman AFB, Missouri Industrial Wastewater System Characterization Survey 3M MSDS and Environmental Data Sheets MATERIAL SAFETY DATA SHEET

3M

3M Center

St. Paul, Minnesota

55144-1000 (612) 733-1110

Copyright, 1996, Minnesota Mining and Manufacturing Company. All rights reserved. Copying and/or downloading of this information for the purpose of properly utilizing 3M products is allowed provided that:

- 1) the information is copied in full with no changes unless prior agreement is obtained from 3M, and
- 2) Deitheratee Grex one theancighmal is respid profiberwiseon.

SPECIALTY CHEMICALS DIVISION DIVISION:

TRADE NAME:

FC-203CF LIGHT WATER(TM) Brand Aqueous Film Forming Foam ID NUMBER/U.P.C.:

98-0211-5617-3 00-51135-10152-0 98-0211-5618-1 00-51135-10153-7 98-0211-5619-9 00-51135-10154-4 98-0211-5620-7 00-51135-10155-1 98-0211-5621-5 00-51135-10156-8 98-0211-5622-3 00-51135-10157-5 98-0211-5623-1 -ZF-0002-0620-9

ZF-0002-0789-2

ISSUED: August 22, 1996

SUPERSEDES: November 13, 1995

DOCUMENT: 10-4322-3

1. INGREDIENT	C.A.S. NO.	_	ERCENT	
WATER DIETHYLENE GLYCOL BUTYL ETHER AMPHOTERIC FLUOROALKYLAMIDE DERIVATIVE	7732-18-5 112-34-5	69.0	- 71.0 20.0	
+(5803P)	TradeSecret TradeSecret 102-71-6	1 1.0 0.5	- 5 - 5.0 - 1.5	
+(5804P) TOLYL TRIAZOLE	TradeSecret 29385-43-1	0.5	- 1.5 0.05	

New Jersey Trade Secret Registry Number (EIN) 04499600-+

This product contains the following toxic chemical or chemicals subject to the reporting requirements of Section 313 of Title III of the Emergency Planning and Community Right-To-Know Act of 1986 and 40 CFR Part 372: DIETHYLENE GLYCOL BUTYL ETHER

2	PHYSICAL	מידמת
4.	LUISICAL	DAIA

BOILING POINT: ..... 100 C

(Typical) -Caid"e^∠oc™-

Abbreviations: N/D - Not Determined N/A - Not Applicable

MSDS:	FC-2	USCF	LIGHT	WATER (TM)	Brand	Aqueous	FIIM	rorming	roam	
Augus	t 22,	1996	6							

PAGE 3

### 5. ENVIRONMENTAL INFORMATION

\_\_\_\_\_\_

### SPILL RESPONSE:

Observe precautions from other sections. Ventilate area. Contain spill. Cover with absorbent material. Collect spilled material. Clean up residue with water. Place in an approved metal container. Seal the container.

### RECOMMENDED DISPOSAL:

Discharge spent solutions to a wastewater treatment system. Reduce discharge rate if foaming occurs. Large quantities may adversely affect biological wastewater treatment systems. Incinerate in an industrial or commercial facility in the presence of a combustible material. Combustion products will include HF.

### ENVIRONMENTAL DATA:

A Product Environmental Data Sheet (PED) is available.

5-Day Biochemical Oxygen Demand (BOD5): 0.35 g/g; 20-Day Biochemical Oxygen Demand (BOD20): 0.75 g/g; 20-Day BOD/COD: 0.96; Chemical Oxygen Demand (COD): 0.75 g/g; 96-Hr LC50, Fathead minnow (Pimephales promelas): >1,000 mg/L; 48-Hr EC50, Water flea,(Daphnia magna): >1,000 mg/L; 96-Hr EC50, Algae (Selenastrum capricornutum): 143 mg/L (130-156); 30-Min EC50, Photobacterium phosphoreum (Microtox System): 280 mg/L (260-300); 3-Hr, 20C EC50, Activated Sludge Respiration (OECD Method #209): >1,000 mg/L.

### REGULATORY INFORMATION:

Volatile Organic Compounds: 200 gms/liter South Coast Air Quality Mgmt Dist Method Calc. @ 20 C.. VOC Less H20 & Exempt Solvents: N/A.

Since regulations vary, consult applicable regulations or authorities before disposal. In the event of an uncontrolled release of this material, the user should determine if the release qualifies as a reportable quantity. U.S. EPA Hazardous Waste Number = None (Not U.S. EPA Hazardous).

The components of this product are in compliance with the chemical registration requirements of: TSCA, EINECS, CDSL, AICS, MITI.

### EPCRA HAZARD CLASS:

FIRE HAZARD: No PRESSURE: No REACTIVITY: No ACUTE: Yes CHRONIC: Yes

### \_\_\_\_\_\_

### 6. SUGGESTED FIRST AID

### EYE CONTACT:

Immediately flush eyes with large amounts of water for at least 15 minutes. Get immediate medical attention.

Abbreviations: N/D - Not Determined N/A - Not Applicable

MSDS: FC-203CF LIGHT WATER(TM) Brand Aqueous Film Forming Foam August 22, 1996 PAGE
2. PHYSICAL DATA (continued)
VAPOR DENSITY:  Ca. 0.77 Air=1  Calc @ 20C  EVAPORATION RATE:  SOLUBILITY IN WATER:  Miscible  SPECIFIC GRAVITY:  1.0 Water=1  PERCENT VOLATILE:  90 % by wt  pH:  8.5  VISCOSITY:  N/D  MELTING POINT:  N/A
APPEARANCE AND ODOR: Clear, amber colored liquid.
3. FIRE AND EXPLOSION HAZARD DATA
FLASH POINT:
SPECIAL FIRE FIGHTING PROCEDURES: Not applicable
UNUSUAL FIRE AND EXPLOSION HAZARDS: See Hazardous Decomposition section for products of combustion.
4. REACTIVITY DATA
STABILITY: Stable
INCOMPATIBILITY - MATERIALS/CONDITIONS TO AVOID: Not applicable.
HAZARDOUS POLYMERIZATION: Hazardous polymerization will not occur.
HAZARDOUS DECOMPOSITION PRODUCTS: Carbon Monoxide and Carbon Dioxide, Oxides of Nitrogen, Oxides of Sulfur, Hydrogen Fluoride
Thermal decomposition of usage concentrations does not present a hazard.
Abbreviations: N/D - Not Determined N/A - Not Applicable

MSDS: FC-203CF LIGHT WATER(TM) Brand Aqueous Film Forming Foam

August 22, 1996

PAGE 5

7. PRECAUTIONARY INFORMATION (continued)

### EXPOSURE LIMITS

INGREDIENT	VALUE	UNIT	TYPE	AUTH	SKIN*
WATER DIETHYLENE GLYCOL BUTYL ETHER AMPHOTERIC FLUOROALKYLAMIDE	NONE 35	NONE PPM	NONE TWA	NONE CMRG	
· DERIVATIVE +(5803P)	NONE	NONE	NONE	NONE	
ALKYL SULFATE SALTS(2) +(5805P, 5806P)	NONE 5	NONE MG/M3	NONE TWA	NONE ACGIH	
+(5804P)	O.1 NONE	MG/M3 NONE	TWA NONE	3M NONE	Y

\* SKIN NOTATION: Listed substances indicated with 'Y' under SKIN refer to the potential contribution to the overall exposure by the cutaneous route including mucous membrane and eye, either by airborne or, more particularly, by direct contact with the substance. Vehicles can alter skin absorption.

### SOURCE OF EXPOSURE LIMIT DATA:

- ACGIH: American Conference of Governmental Industrial Hygienists
- 3M: 3M Recommended Exposure Guidelines
- CMRG: Chemical Manufacturer Recommended Exposure Guidelines
- NONE: None Established

### 8. HEALTH HAZARD DATA

### EYE CONTACT:

Moderate Eye Irritation: signs/symptoms can include redness, swelling, pain, tearing, and hazy vision.

### SKIN CONTACT:

- . Moderate Skin Irritation (after prolonged or repeated contact): signs/symptoms can include redness, swelling, itching, and dryness.
- .. Prolonged or repeated exposure may cause:

May be absorbed through the skin in harmful amounts.

### INHALATION:

Single overexposure, above recommended guidelines, may cause:

Central Nervous System Depression: signs/symptoms can include headache, dizziness, drowsiness, incoordination, slowed reaction time, slurred speech, giddiness and unconsciousness.

MSDS: FC-203CF LIGHT WATER(TM) Brand Aqueous Film Forming Foam August 22, 1996	PAGE	,
6. SUGGESTED FIRST AID (continued)		-
SKIN CONTACT: Flush skin with large amounts of water. If irritation persists, get medical attention.		
INHALATION:  If signs/symptoms occur, remove person to fresh air. If signs/symptoms continue, call a physician.		
IF SWALLOWED: Drink two glasses of water. Call a physician.		
7. PRECAUTIONARY INFORMATION		
EYE PROTECTION: Avoid eye contact with vapor, spray, or mist. Wear vented goggles.		_
SKIN PROTECTION: Avoid skin contact. Wear appropriate gloves when handling this material. A pair of gloves made from the following material(s) are recommended: butyl rubber.		
RECOMMENDED VENTILATION: Use with adequate dilution ventilation.		
RESPIRATORY PROTECTION:  Avoid breathing of vapors, mists or spray. Select one of the following NIOSH approved respirators based on airborne concentration of contaminants and in accordance with OSHA regulations: Half-mask organic vapor respirator with dust/mist prefilter.		
PREVENTION OF ACCIDENTAL INGESTION:  Do not eat, drink or smoke when using this product. Wash exposed areas thoroughly with soap and water. Wash hands after handling and before eating.		
RECOMMENDED STORAGE: Store away from heat. Keep container closed when not in use.		
FIRE AND EXPLOSION AVOIDANCE: Not applicable.	÷	
MIS HAZARD RATINGS: HEALTH: 2 FLAMMABILITY: 0 REACTIVITY: 0 PERSONAL PROTECTION: X (See precautions, section	7.)	

Abbreviations: N/D - Not Determined N/A - Not Applicable

### APPENDIX F

Whiteman AFB, Missouri
Industrial Wastewater System Characterization Survey
March 1997 Pollution Prevention
Opportunity Assessment Surveys

Shop: Metals Technology, Survival Equipment, Repair and Reclamation, Pneudraulics,

**Egress** 

**BUILDING No.** 1117 **Office Symbol:** 442 MS **POC:** Capt Weimer **Telephone:** 2155

### Mission Narrative:

**Repair and Reclamation:** Performs general maintenance on the A-10. Heavy maintenance includes all aspects of the aircraft operational systems, with the exception of the fuel system.

**Electro -Environmental -** Service and maintenance of the electrical and environmental aircraft system components for the A-10. These duties include inspecting, repairing, servicing, and modifying systems and equipment. Personnel also perform service, inspection, and maintenance on nickel-cadmium batteries.

**Pneudraulics:** Inspection, repair and maintenance of the A-10 hydraulic system.

Wheel and Tire: Responsible for inspecting, maintaining and overhauling the A-10 wheel assembly. This includes the cleaning of wheel bearings.

Egress: Responsible for the inspection, maintenance, and repair of the A-10's ejection system.

**Survival Equipment:** Responsible for the maintenance, inspection, and repair of the A-10 survival equipment including parachutes, life vests, and rubber survival rafts.

**Metals Technology:** Responsible for limited structural painting and welding of A-10 parts which includes surface preparation done by sanding and wipe-down prior to touching up with the appropriate surface paint. A bead blast booth is available for paint removal on A-10 parts.

### **Industrial Wastewater Sources:**

There are two large drains in the main bay, one runs the entire width of the hangar and is located by the door. The other drain is located in the middle of the hangar and runs the length of the hangar. Touch-up painting is also conducted in close proximity to the middle drain. Aircraft washing is accomplished along with normal floor cleaning. Possible pollutants in this washwater include carbon, fuels, oils, greases, metals, paint over spray, sanding residual and hydraulic fluid.

### Pollutants of Concern based on Analytical Results:

Wastewater sampling was conducted at the manhole which services your building. Pollutant annotations are provided for identification of pollutant sources and ensuing pollution prevention initiatives. Potable water sample results are identified for background, baseline information. The following pollutants were detected:

\*Hathaway, G. and Proctor N. Chemical Hazards of the Workplace, Third Edition

Contaminant	Date Detected/Range	*Possible Source	Remarks
	mg/l		
Aluminum	97/03/26,27,28	metal alloy	
	Range 0.0903-1.84		
Antimony	97/03/26,27	constituent with alloys	
-	Range 0.004-0.005	with other metals	
Arsenic	97/03/26	pigments, alloy	
	Range < 0.005-0.005		
Barium	97/03/26,27,28	lube oil additive,	potable water = 0.033
	Range 0.063-0.094	manufacture of paper	mg/l
		electrodes, catalyst for	
		organic reactions	
Cadmium	97/03/26,27,28	electroplating, solder for	
	Range 0.001-0.006	aluminum, constituent	
		of easily fusible alloys,	
		deoxidizer in nickel	
		plating	
Chromium	97/03/28	stainless and alloy	
	Range < 0.005-0.01	steels, pigments,	
	_	electroplating, corrosion	
		resistant products	
Beryllium	97/03/26	non-corrodible metal	
•	Range < 0.0005-0.0008	used in alloys	
Copper	97/03/26,27, 28	metal alloy	potable water = 0.015
* 1	Range 0.022-0.03		mg/l
Iron	97/03/26,27,28	metal	potable water = 0.045
	Range 1.75-3.4		mg/l
Lead	97/03/26, 27, 28	paint, ink, ceramics,	potable water = 0.001
	Range 0.005-0.007	batteries	mg/l
Mercury	97/03/26	electrical apparatus,	
<u>-</u>	Range < 0.0002-0.0004	measurement systems,	
	_	paint	
Nickel	97/03/26,27	corrosion resistant alloy,	
	Range 0.016-0.025	electroplating, nic-cad	
		batteries	
Strontium	97/03/26,27,28	stainless and alloy	
	Range 0.178-0.286	steels, pigments,	
		electroplating, corrosion	!
		resistant products	

Contaminant	Date Detected	Possible Source	Remarks
Zinc	97/03/24,25,26,27,28 Range 0.031-0.07	galvanizing, electroplating, alloying, paint pigments	potable water = 0.006 mg/l

### Recommendations/Conclusions based on Visual Observation and/or Chemical Listing Review:

### Reclamation and Repair:

The following chemicals were identified on your chemical authorization listing maintained by the BEE shop. Given their hazardous properties both to the human and environment, please investigate substitution with a less hazardous material. This can be accomplished by consulting the Technical Order that mandates it's use and confirming if the T.O. authorizes a different chemical or by calling the item manager.

\*Hathaway, G. and Proctor N. Chemical Hazards of the Workplace, Third Edition

NSN	Name	*Haz	Recommended	Rationale
		Constituent	Action	
8030-01-184-0330	Sealant	Mang Chromate	substitute if possible	health, environment, found in wastestream

Metals Technology/Structural Maintenance: During the survey, I observed numerous containers of methyl ethyl ketone in the paint room, located by the paint guns and gun washer. Recommend investigating the use of a less hazardous substitute to afford worker and environmental protection. Note, it must be in compliance with the applicable Technical Order.

The following chemicals were identified on your chemical authorization listing maintained by the BEE shop. Given their hazardous properties both to the human and environment, please investigate substitution with a less hazardous material. This can be accomplished by consulting the Technical Order that mandates it's use and confirming if the T.O. authorizes a different chemical or by calling the item manager.

\*Hathaway, G. and Proctor N. Chemical Hazards of the Workplace, Third Edition

NSN	Name	*Haz	Recommended	Rationale
		Constituent	Action	
8010-00-082-2450	Primer coating	strontium	look for substitution	health and detected
	kit	chromate		in wastestream
8010-00-935-7080	Primer	strontium	look for substitution	health and detected
		chromate		in wastestream
8010-01-050-4082	Epoxy resin kit	strontium	look for substitution	health and detected
		chromate		in wastestream
8010-00-297-0593	So Sure Yellow	lead and zinc	look for substitution	health and detected
		chromate		in wastestream
8010-00-515-2208	Paint	lead and zinc	look for substitution	health and detected

		chromate		in wastestream
8030-01-184-0328	PR1436-G	strontium	look for substitution	health and detected
		chromate		in wastestream

Egress: Chemical authorization listing reviewed with no recommendations.

**Survival Equipment:** Chemical authorization listing reviewed with no recommendations.

Wheel/Tire: Parts washer wastewater used in the Wheel and Tire Shop has been tested and approved for disposal in the drain by Bioenvironmental Engineering. Chemical authorization listing reviewed with no recommendations.

Pneudraulics: Chemical authorization listing reviewed with no recommendations.

### Pollution Prevention Recommendations - All:

- a. Ensure spill kits are readily available and easily accessible.
- b. If applicable, with the exception of drains servicing washracks, cover or block (removable New Pig Catalog, May 96, pp 161-165 or permanent) shop drains during any operation that could generate a spill or allow paint overspray to reach the drains Utilize drip pans under any equipment or operation that could generate a spill.
- c. Minimize the amount of floor washwater by performing as a mop and bucket operation. Dry sweep prior to mopping if in compliance with BEE shop.
- d. Place flow restrictors on all hoses.
- e. Immediately clean up all spills with absorbant material and dispose as solid waste in drums to be characterized prior to disposal.

**Shop:** A 10 Phase Inspection, Structural Maintenance, Washrack, Fuels

**BUILDING No.** 1118 **Office Symbol:** 442 MS

POC: Mr. Mock - Structural Maintenance, Mr. Chris Jergenson - A-10 Phase

Telephone: 3984

### Mission Narrative:

**Phase Inspection:** This shop is responsible for disassembly, inspection, and repair of the A-10 aircraft. The inspection is required every 400 flying hours. Pre-phase inspection consists of inspection on the fuel system and flight controls. During the 16 day full phase, all applicable shops inspect and repair components as required. The final phase is then conducted where complete functional checks are performed.

**Structural Maintenance:** Responsible for limited structural painting of the A-10 which includes surface preparation done by sanding and wipe-down prior to touching up with the appropriate surface paint. A bead blast booth is available for paint removal on A-10 parts.

**Armament:** Inspect, repair, and overhaul the GAU 8/30mm gun and associated system components. Inspection involves the removal of the gun and washing in the washrack bay. Repair is done by disassembling the system components and placing in parts washer. Overhaul entails removal, inspection, replacement of parts if indicated, and reassembly.

**Fuel System:** Maintenance of the A-10 fuel system requirement is identified by excessive fuel leakage or in-flight write-ups. Once the maintenance requirement is identified, the aircraft's fuel tanks are defueled, and depuddled into a bowser. Entry is made into the cell after vapor exhaust/purge is done where the foam is pulled and air dried. Valves and lines are then inspected, repaired, or replaced.

### Industrial Wastewater Sources:

Wastewater sources include the washrack wastewater where the A-10 armament is cleaned in addition to normal aircraft washing. Touch-up painting is also conducted in an area close to the washrack drain. Possible pollutants in this washwater include carbon, fuels, oils, greases, metals, paint over spray, sanding residual and hydraulic fluid.

### Pollutants of Concern based on Analytical Results:

Wastewater sampling was conducted at the manhole which services your building. Annotation of detected pollutants are provided for identification of pollutant sources and ensuing pollution prevention initiatives. Potable water sample results are identified for background, baseline information. The following pollutants were detected:

\* Hathaway, G. and Proctor N. Chemical Hazards of the Workplace, Third Edition

Contaminant	Date Detected/Range	*Possible Source	Remarks
	mg/l		
Cyanide	97/03/22	electroplating,	
	Range 0.033	hardening of metals	
Aluminum	97/03/21,22,23	metal alloy	
	Range 0.204-0.291		
Barium	97/03/21,22,23	lube oil additive,	potable water = 0.033
	Range 0.042-0.058	manufacture of paper	mg/l
	1	electrodes, catalyst for	
		organic reactions	
Cadmium	97/03/21,22,23	electroplating, solder for	
	Range 0.015-0.109	aluminum, constituent	
		of easily fusible alloys,	
		deoxidizer in nickel	
		plating	
Chromium	97/03/22,23	stainless and alloy	
	Range 0.006-0.018	steels, pigments,	
		electroplating, corrosion	
		resistant products	
Copper	97/03/21,22, 23	metal alloy	potable water = 0.015
••	Range 0.018-0.232		mg/l
Iron	97/03/21,22,23	metal	potable water = 0.045
	Range 0.051-0.663		mg/l
Lead	97/03/21,22,23	paint, ink, ceramics,	potable water = 0.001
	Range 0.003-0.078	batteries	mg/l
Mercury	97/03/23	electrical apparatus,	
•	Range < 0.0002-0.0002	measurement systems,	
		paint	
Nickel	97/03/26,27	corrosion resistant alloy,	
		electroplating, nic-cad	
	Range 0.019-0.026	batteries	
Strontium	97/03/21,22,23	stainless and alloy	potable water = 0.223
	Range 0.547-0.792	steels, pigments,	mg/l
	_	electroplating, corrosion	
		resistant products	
Zinc	97/03/21,22,23	galvanizing,	potable water = 0.006
	Range 0.029-0.105	electroplating, alloying,	mg/l
	_	paint pigments	
Titanium	97/03/22	enamels, pigment	
	Range 0.028		
Selenium	97/03/21	rectifiers, photo cells	
	Range 0.005		
Bis2ethylhexly phthalate	97/03/21	plasticizer for PVC	
J J 1	Range 18.5		1

### Recommendations/Conclusions based on Visual Observation and/or Chemical Listing Review:

**Fuels Shop:** A copy of analysis conducted by the Bioenvironmental Engineering, 27 Mar 96, reference BEF #GM960509-517 was obtained during this survey. The results were for fuel tank sealant from fuel cell repair. Cadmium was detected at 2.47 mg/l with a limit of 1 mg/l. Benzene, ethyl benzene, toluene, and xylene (F001-005) were detected in high concentrations. Please obtain written guidance from the BEE shop for proper disposal of this waste and maintain in your files.

The following chemical was identified on your chemical authorization listing maintained by the BEE shop. Given its hazardous properties both to the human and environment, please investigate substitution with a less hazardous material. This can be accomplished by consulting the Technical Order that mandates it's use and confirming if the T.O. authorizes a different chemical or contacting the item manager.

\* Hathaway, G. and Proctor N. Chemical Hazards of the Workplace, Third Edition

NSN	Name	*Haz	Recommended	Rationale
		Constituent	Action	
6810-00-281-2785	methyl ethyl	methyl ethyl	substitute iaw TO	health and
	ketone	ketone		environment

**Armament:** Parts washer water analytical results for the Armament Shop collected by the Bioenvironmental Engineering office 17 Oct 96, reference BEF#GM961342-1344 showed high metal content. Disposal is done as a hazardous waste. Recommend holding and sampling the washwater produced during cleaning of the gun to ensure it does not require disposal as a hazardous waste.

The following chemicals were identified on your chemical authorization listing maintained by the BEE shop. Given their hazardous properties both to the human and environment, please investigate substitution with a less hazardous material. This can be accomplished by consulting the Technical Order that mandates it's use and confirming if the T.O. authorizes a different chemical or by calling the item manager.

Hathaway, G. and Proctor N. Chemical Hazards of the Workplace, Third Edition

NSN	Name	*Haz Constituent	Recommended Action	Rationale
9150-00-954-7422	Perma Slik	lead	look for substitution	health and detected in wastestream
8010-00-598-5936	Enamel - OD	lead	look for substitution	health and detected in wastestream
8030-00-181-7884	Accelerator	lead	look for substitution	health and detected in wastestream
8030-00-297-6677	CS3100 Pt B	lead	look for substitution	health and detected

	in wastestream
	m wastestream

**Structural Maintenance:** The following chemicals were identified on your chemical authorization listing maintained by the BEE shop. Given their hazardous properties both to the human and environment, please investigate substitution with a less hazardous material. This can be accomplished by consulting the Technical Order that mandates it's use and confirming if the T.O. authorizes a different chemical or by calling the item manager.

\*Hathaway, G. and Proctor N. Chemical Hazards of the Workplace, Third Edition

NSN	Name	*Haz Constituent	Recommended Action	Rationale
8010-00-082-2450	Primer coating kit	strontium chromate	look for substitution	health and detected in wastestream
8010-00-935-7080	Primer	strontium chromate	look for substitution	health and detected in wastestream
8010-01-050-4082	Epoxy resin kit	strontium chromate	look for substitution	health and detected in wastestream
8010-00-297-0593	So Sure Yellow	lead and zinc chromate	look for substitution	health and detected in wastestream
8010-00-515-2208	Paint	lead and zinc chromate	look for substitution	health and detected in wastestream
8030-01-184-0328	PR1436-G	strontium chromate	look for substitution	health and detected in wastestream

**Phase Inspection:** The following chemicals were identified on your chemical authorization listing maintained by the BEE shop. Given their hazardous properties both to the human and environment, please investigate substitution with a less hazardous material. This can be accomplished by consulting the Technical Order that mandates it's use and confirming if the T.O. authorizes a different chemical or by calling the item manager

\* Hathaway, G. and Proctor N. Chemical Hazards of the Workplace, Third Edition

NSN	Name	*Haz Constituent	Recommended Action	Rationale
6850-01-158-3928	Cleaning Compound	1,1,1 Trichloroethane	look for substitution	health and environment
8030-01-184-0328	Sealing Compound	Strontium Chromate	look for substitution	health and environment detected in wastestream
00-823-7860	Lub Compound	1,1,1 Trichloroethane	look for substitution	health and environment

- a. Ensure spill kits are readily available and easily accessible.
- b. If applicable, with the exception of drains servicing washracks, cover or block (removable New Pig Catalog, May 96, pp 161-165 or permanent) shop drains during any operation that could generate a spill. Utilize drip pans under any equipment or operation that could generate a spill.
- c. Minimize the amount of floor washwater by performing as a mop and bucket operation. Dry sweep prior to mopping.
- d. Place flow restrictors on all hoses.
- e. Immediately clean up all spills with absorbant material and dispose as solid waste in drums to be characterized prior to disposal.

Shop: A 10 Composite AGE, NDI, Engine Shops

**BUILDING No.** 1119 **Office Symbol:** 442 MXS

POC: Mr Steve Miller - AGE, Mr Alan Scott - NDI, Mr Tom O'Neill - Engine Shop

Telephone: 3239, 6058

#### Mission Narrative:

**AGE:** This shop provides support for approximately 200 pieces of AGE equipment utilized in support of the A-10 mission. This maintenance is both scheduled and unscheduled. It is comprised of washing, oil changes, and hydraulic and transmission fluid servicing. Stripping and painting of the equipment is done by contract. There is a battery room that is no longer used due to conversion to self contained gel batteries. There is a washrack in one of the bays where equipment is washed and steam cleaned if necessary. This bay is serviced by a small drain - approximately 4" x 4".

**NDI:** Inspect the A-10 for structural integrity by means of magnetic particle, ultrasound, eddy current, fluorescent penetrant dye or x-ray. Oils are also analyzed for metal particle content.

**Engine Shop:** Provide second level and unscheduled maintenance for A-10 engines and repair of APUs.

Customer: A-10

### Industrial Wastewater Sources:

AGE: Floor washwater from a floor scrubbing machine which may contain small amounts of oils, greases, fuels, transmission, spray paint overspray and hydraulic fluids. This washwater is poured down the drain which flows into an Oil Water Separator (OWS). There are 8 - 4"x4" drains located throughout the bays. Equipment washwater is produced in the washrack bay which may contain oils, greases, fuels, transmission, paint leachate, and hydraulic fluid. The washrack is serviced by an OWS.

**NDI:** All spent fluorescent penetrant solutions are disposed as hazardous waste. The only wastewater discharges from this activity are the rinsate residuals which occur each time an aircraft part is dipped into straight solution and then followed by a rinse. This shop did not have a silver recovery unit at the time of the survey. According to Mr. Scott all chemical waste from the x-ray process is captured and turned into hazardous waste. Oil waste from oil/metal analysis is turned into hazardous waste.

**Engine Shop:** A Safety Kleen parts washer is utilized by this shop for the cleaning of bearings. According to Mr. O'Neill, Safety Kleen disposes of the spent fluid (NSN 6850-00-F01-4954) and refills the unit. The only wastewater source would be the result of floor washing which could contain soaps, fuel, oils, greases, and hydraulic fluid.

#### Pollutants of Concern based on Analytical Results:

Wastewater sampling was conducted at the manhole which services your building and Building 1125 (97/03/25, 26, 27, 28) and sampling was conducted at a manhole which services only your facility (97/03/24). Annotation of detected pollutants is provided for identification of sources and ensuing pollution prevention initiatives. Potable water sample results are identified for background, baseline information. Noteworthy, during the sampling period was a discharge of a green substance similar to glycol or fluorescent dye detected:

<sup>\*</sup> Hathaway, G. and Proctor N. Chemical Hazards of the Workplace, Third Edition

Contaminant	Date Detected/Range	*Possible Source	Remarks
	mg/l		
Oil and Grease	97/03/28	oils, fuels, hydraulic	Wastewater Treatment
	Range 7.36-224	fluid, greases	Plant (WWTP)limit=20
COD	97/03/25,26,28,24	organic matter	(WWTP)limit=120
	Range 65-5320		
Ammonia	97/03/25,26,27,28	organic matter	(WWTP)limit=4.5
	Range 0.8-7.25		
Phenols	97/03/24	disinfectant, chemical	(WWTP)limit=100
	Range 164	intermediate in synthesis	
		of organic chemicals	
m,p Xylene	97/03/25,27	solvent, cleaning agent,	
	Range 1.3-2.2	fuel component	
Bis(2-	97/03/25,24	plasticizer for PVC	
ethylhexyl)phthalate	Range 28.6-353		
Aluminum	97/03/24,25,26,27,28	metal alloy	
	Range 0.027-13.9		
Antimony	97/03/24,25,26,27,28	constituent with alloys	
	Range 0.007-0.351	with other metals	
Arsenic	97/03/24,25	pigments, alloy	
	Range < 0.005-0.007		
Barium	97/03/24,25,26,27,28	lube oil additive,	potable water = 0.033
	Range 0.038-2.76	manufacture of paper	mg/l
		electrodes, catalyst for	
		organic reactions	

Contaminant	Date Detected/Range	Possible Source	Remarks
	mg/l		
Cadmium	97/03/24,25,26,27,28	electroplating, solder for	
	Range 0.009-2.36	aluminum, constituent	
		of easily fusible alloys,	
		deoxidizer in nickel	
		plating	
Chromium	97/03/24,25,28	stainless and alloy	
	Range 0.017-0.845	steels, pigments,	
		electroplating, corrosion	
		resistant products	
Cobalt	97/03/24	alloys, high speed steels,	
	. Range 0.038	paints, electroplating	
Copper	97/03/24,25,26,27,28	metal alloy	potable water = 0.015
	Range 0.079-9.23		mg/l
Iron	97/03/24,25,26,27,28	metal	potable water = 0.045
	Range 0.363-30.3		mg/l
Lead	97/03/24,25,26,27,28	paint, ink, ceramics,	potable water = 0.001
	Range 0.017-6.42	batteries	mg/l
Mercury	97/03/25,26	electrical apparatus,	
	Range 0.0003-0.0005	measurement systems,	
		paint	
Molybdenum	97/03/24,25	corrosion inhibitor,	
	Range 0.238-0.276	lubricant	
Nickel	97/03/24,25,26,27,28	corrosion resistant alloy,	
	Range 0.012-0.756	electroplating, nic-cad	
		batteries	
Silver	97/03/25	photography, silver	
	Range 0.152-0.337	plating, oxidizing agent	
Strontium	97/03/24,25,26,27,28	stainless and alloy	
	Range 0.199-1.77	steels, pigments,	
		electroplating, corrosion	
		resistant products	
Thallium	97/03/25	easily fusible heavy	
	Range 0.092	metal	
Titanium	97/03/24,25	welding rod coating,	
	Range 0.079-0.39	acid resistant enamels,	
		paint pigment	
Zinc	97/03/24,25,26,27,28	galvanizing,	
	Range 0.068-21	electroplating, alloying,	potable water = 0.006
		paint pigments	mg/l

# Recommendations/Conclusions based on Visual Observation and/or Chemical Listing Review:

AGE - Submit a work order to have your washrack drain size/piping and capacity increased. Block all other bay drains by using temporary or permanent drain blocks. Request analysis of floor washwater prior to disposal. After review of the shop's chemical listing, recommend researching hazardous material substitution ONLY in accordance with the applicable Technical Order for the following:

\* Hathaway, G. and Proctor N. Chemical Hazards of the Workplace, Third Edition

NSN	Name	*Haz Constituent	Recommended Action	Rationale
3439-00-269-9610	rosin core solder	lead copper	substitute iaw TO	detected in wastewater
8010-00-936-8371	lacquer - yellow	lead chromate	substitute iaw TO	detected in wastewater
8030-00-764-6658	antisieze compound	lead monoxide	substitute iaw TO	detected in wastewater
8010-00-852-9033	enamel, yellow	lead chromate	substitute iaw TO	detected in wastewater
9150-01-260-2534	lubricant, solid film	lead	substitute iaw TO	detected in wastewater
6810-00-281-2785	methyl ethyl ketone	methyl ethyl ketone	substitute iaw TO	health and environmental pollutant
6810-00-351-8185	glycol	glycol	contact CEV for recycling	best management practice
8010-00-721-9479	lacquer - orange		check for lead	-
8010-00-721-9479	lacquer - blue		check for lead	
8010-00-988-1458	enamel - blue		check for lead	

# Recommendations/Conclusions based on Visual Observation and/or Chemical Listing Review:

**NDI** - Purchase a silver recovery unit and ensure proper waste disposal of x-ray development and fluorescent dye penetrant solutions. Ensure parts that are dipped in the fluorescent dye processes are allowed to air dry as much as possible prior to rinsing.

**Engine Shop** - Contact CEV concerning solvent recycling and/or maintaining Safety Kleen product.

- a. Ensure spill kits are readily available and easily accessible.
- b. If applicable, with the exception of drains servicing washracks, cover or block (removable New Pig Catalog, May 96, pp 161-165 or permanent) shop drains during any operation that could generate a spill. Utilize drip pans under any equipment or operation that could generate a spill.
- c. Minimize the amount of floor washwater by performing as a mop and bucket operation Dry sweep prior to mopping.
- d. Place flow restrictors on all hoses.
- e. Immediately clean up all spills with absorbant material and dispose as solid waste in drums to be characterized prior to disposal.

Shop: AGE - Structural Maintenance

**Building #:** 7

Office Symbol: 509 MXS /LGMFS

**POC:** A1C Waggoner **Telephone:** 7710

#### Mission Narrative:

This facility is co-located with the AGE facility and segregated in an area designed for stripping and painting. The paint barn is utilized for stripping, preparing, and repainting of AGE equipment, and aircraft parts for the T-38s and B2s. Bead-blasting is used for paint stripping, followed by a surface preparation wipe-down with alcohol or methyl ethyl ketone. Aircraft armament is cleaned with Safestrip. The paint residue from the bead blasting operation is swept from the floor and processed through a hopper which separates by particle size prior to disposal as hazardous waste.

Customer: B2, T38, AGE

#### Industrial Wastewater Sources:

There are no floor drains located in this shop.

# Recommendations/Conclusions based on Visual Observation or Chemical Listing Review:

Please see recommendations for Structural Maintenance, Bldg 27. Also, recommend strict housekeeping to preclude paint over spray on personal protective equipment. Additionally, recommend review by the base BEE shop to ensure appropriate personnel safety measures are in place and adhered to i.e. sweeping up paint residue that may contain lead, chromates etc.

- a. Ensure spill kits are readily available and easily accessible.
- b. Immediately clean up all spills with absorbant material and dispose as solid waste in drums to be characterized prior to disposal.
- c. Utilize drip pans under any equipment or operation that could generate a spill. If the floor is cleaned, using either an automatic floor scrubber or mop/water, recommend analysis of wastewater prior to disposal to preclude possible pollutant discharges.
- e. Investigate the possibility of hazardous material substitution ONLY if in accordance with the applicable technical order.

Shop: Armament Systems and Weapons Standardization

**BUILDING No. 14** 

Office Symbol: 509 MXS/LGMR and 509 OG/OGW

POC: TSgt Uptegraft and SMSgt Duffman

**Telephone:** 7099, 7100

#### Mission Narrative:

Armament Systems: Responsible for the maintenance and inspection of weapons suspension systems to include the Bomb Rack Assembly (BRA), Bomb Rack Unit 44 (BRU-44) which goes onto the Rotary Launcher Assembly (RLA) for the B2. Cleaning of the BRU 44 is accomplished annually by scraping and wiping off the carbon residue which occurs after firing. The BRA will not be used until later on in the year. It is electrically activated and as such will only require wipe down after firing.

Weapons Standardization: As a support element for the wing this shop provides bomb loading training for the B2. Storage of bomb and AGE support equipment is located in a bay.

Customer: B2

### Industrial Wastewater Sources:

There are two circular drains located in the Armament Shop which are used for floor cleaning wastewater which may contain oils and greases. Floor washwater from the bay area where support equipment for the Weapons Standardization is stored may contain small amounts of fluids to include fuel, hydraulic fluid, oils and greases, and glycols.

#### Pollutants of Concern based on Analytical Results:

Sampling was not done at this facility due to no flow at the appropriate manhole the duration of the survey.

Recommendations/Conclusions based on Visual Observation and/or Chemical Listing Review:

#### **Armament Systems:**

The following chemicals were identified on your chemical authorization listing maintained by the BEE shop and also from the listing obtained from shop personnel during the survey. Given their hazardous properties both to the human and environment, please investigate substitution with a less hazardous material. This can be accomplished by consulting the Technical Order that mandates it's use and confirming if the T.O. authorizes a different chemical or contacting the item manager.

Additionally, recommend written tracking of hazardous materials brought in to your facility by contractor employees. This tracking should include, as a minimum; chemical, NSN, amount, application, and method of disposal.

\*Hathaway, G. and Proctor N. Chemical Hazards of the Workplace, Third Edition

NSN	Name	*Haz Constituent	Recommended Action	Rationale
3439-00-163-4348	Bow Solder	lead, copper, arsenic, zinc	substitute IAW T.O.	health, environment found in wastewater downstream
8030-01-319-0554	Sealing Compound	Magnesium Chromate	substitute IAW T.O.	health, environment found in wastewater
8030-00-762-8007	Manganese Dioxide	Magnesium Chromate	substitute IAW T.O.	health, environment found in wastewater
8030-00-965-2444	Pro Seal	Lead	substitute IAW T.O.	health, environment found in wastewater downstream
8030-00-762-8807	Pro Seal	magnesium chromate	substitute IAW T.O.	health, environment, found in wastewater downstream
8010-00-242-2089	stoddard solvent	stoddard solvent	substitute IAW T.O.	health, environment
8030-01-088-0088	Sealant	Lead	substitute IAW T.O.	health, environment, found in wastewater
8030-00-616-9191	Flamemaster - B	Lead	substitute IAW T.O.	health, environment, found in wastewater

Given the inherent characteristics of the B2, it is understood substitution of hazardous materials may not be possible. For this reason, extreme caution must be followed, both to protect the worker and the environment. Additionally, any pollutant discharges from this facility are conveyed through the industrial discharge system and ultimately go to the wastewater treatment plant (WWTP). This is a crucial concern because of possible exposures to the treatment plant personnel and the ultimate disposal of wastewaters unique to this base. The sludge from the WWTP is dewatered, analyzed and land applied, and the effluent is being used to create artificial wetlands. It is critical the wetlands be maintained in a delicate balance in order to afford their continued use.

- a. Ensure spill kits are readily available and easily accessible.
- b. If applicable, with the exception of drains servicing washracks, cover or block (removable New Pig Catalog, May 96, pp 161-165 or permanent) shop drains during any operation that could generate a spill. Utilize drip pans under any equipment or

- operation that could generate a spill.
- c. Minimize the amount of floor washwater by performing as a mop and bucket operation. Dry sweep prior to mopping.
- d. Place flow restrictors on all hoses.
- e. Immediately clean up all spills with absorbant material and dispose as solid waste in drums to be characterized prior to disposal.

Shop: Building Name: Army National Guard Helicopter Maintenance

Shop: Helicopter Maintenance

BUILDING No. 52 Office Symbol: POC: Mr Wedley Telephone: 5523

#### Mission Narrative:

Provide maintenance and operational support for the 25 Apache helicopters assigned to this battalion. Extensive maintenance is performed at the depot located in Springfield Mo. Phase inspections are performed every 150 hours where disassembly, component removal, and reassembly is done. Limited cosmetic painting and sanding is performed. Removal and installation of pneudraulic and hydraulic systems is conducted in this shop. The 20mm guns are cleaned an average of 1-2 times per year, with waste disposal as hazardous waste. Washing of the helicopter occurs once per 30 days. Engine turbine washes are performed every 50 flying hours using water and Gas Path Cleaner. There are four parts washers in this facility which are maintained by Safety Kleen to include removal and replacement of the naptha based cleaning solution.

Customer: Apache Helicopter

#### Industrial Wastewater Sources:

NOTE: This facility currently flows to the sanitary sewer and will be diverted to the industrial line. Floor washes are done one time per month with a floor scrubbing machine. The washwater may contain small amounts of oils, greases, fuels, hydraulic fluid, paint overspray and metal/paint residue from cosmetic painting operations. This washwater is poured down the drain which is serviced by an Oil Water Separator. The helicopters are also washed in this facility once every 30 days per helicopter. Engine washes are performed every 50 flying hours.

### Pollutants of Concern based Analytical Results:

Sampling was not done at this facility due to no flow at the appropriate manhole the duration of the survey.

# Recommendations/Conclusions based on Visual Observation and/or Chemical Listing Review:

The following chemicals were identified on your chemical authorization listing obtained from shop personnel during the survey. Given their hazardous properties both to the human and environment, please investigate substitution with a less hazardous material. This can be accomplished by consulting the Technical Order (T.O.) that mandates its use

and confirming if the T.O. authorized a different chemical or contacting the item manager.

Additionally, recommend the sampling of engine washwater and aircraft washwater to ensure pollutants are not being discharged.

\*Hathaway, G. and Proctor N. Chemical Hazards of the Workplace, Third Edition

NSN	Name	*Haz Constituent	Recommended Action	Rationale
8010-00-852-9033	Enamel, Yellow	Lead Chromates	substitute i.a.w.	health, environment
6850-01-158-3928	· Cleaning Compound	1,1,1 Trichloroethane	substitute i.a.w.	health, environment
6850-00-570-9360	Electr Contact Cleaner	1,1,1 Trichloroethane	substitute i.a.w. T.O.?	health, environment
8030-00-764-6658	Antisieze Comp	Lead Chromate	substitute i.a.w. T.O.?	health, environment
9150-01-260-2534	Lubricant, Solid	Lead, Antimony Trioxide, MEK	substitute i.a.w. T.O.?	health, environment
00-664-4318	Zinc Chromate Putty	Zinc Chromate	substitute i.a.w. T.O.?	health, environment
3439-00-269-9610	Rosin Core Solder	Lead, Antimony, Copper	substitute i.a.w. T.O.?	health, environment
01-229-2659	RP 3265	Fibrous Glass	substitute i.a.w. T.O.?	health, environment
8010-00-936-8371	Lacquer, Yellow	Lead Chromate	substitute i.a.w. T.O.?	health, environment
00-922-6917	Adhesive 1599	1,1,1 Trichloroethane	substitute i.a.w. T.O.?	health, environment
00-F00-1896	Gasket Remover	Methylene Chloride	substitute i.a.w. T.O.?	health, environment
00-242-3467	Patch Bond	1,1,1 Trichloroethane	substitute i.a.w. T.O.?	health, environment

- a. Ensure spill kits are readily available and easily accessible.
- b. If applicable, with the exception of drains servicing washracks, cover or block (removable New Pig Catalog, May 96, pp 161-165 or permanent) shop drains during any operation that could generate a spill.
- c. Minimize the amount of floor washwater by performing as a mop and bucket operation. Dry sweep the floor prior to mopping ONLY with approval from Bioenvironmental Engineering to ensure an inhalation hazard is not created.
- d. Place flow restrictors on all hoses.
- e. Immediately clean up all spills with absorbant material and dispose as solid waste in drums to be characterized prior to disposal.
- f. Investigate the substitution of the above chemicals with less hazardous chemicals ONLY if allowed by the applicable Technical Order

Shop: B2 Docks

**BUILDING** #s: 5050, 5051, 5052, 5053, 5054, 5055, 5056, 5057, 5058, 5059, 5060

Office Symbol: 509 POC: TSgt Kiplinger Telephone: 1739

#### Mission Narrative:

Provide maintenance on B2 as required. All chemicals are brought in from the Support Section in Bldg 33. The maintenance is summarized as follows:

- a. Addition of 7808 oil
- b. Refueling from in-hangar CASS fuel pit via pentagraph hook-up
- c. Limited structural maintenance for minor repairs to include tape replacement, hand sanding using a hepa-vac, surface preparation with Turco, caulking and primer application as necessary, and painting. Personal protective equipment (PPE) during this operation is a full faced respirator and tyvex suit. The hangar floor is covered with plastic and a plastic tent-like structure encloses the area to be worked on. The plastic is removed following the repair and disposed as hazardous waste
- d. Ops check avionics, hydraulic, engine, ECS, and radar system are checked

Customer: B2

#### Industrial Wastewater Sources:

Floor washwater wastestream which may contain oils, greases, fuel, hydraulic fluid, and uncaptured stripping, painting residue.

# Pollutants of Concern based on Analytical Results:

Annotation of sampled pollutants are provided for identification of pollutant sources and ensuing pollution prevention initiatives. Pollutant discharges, particularly metals, were inordinately high on 23 Mar. Potable water levels are provided to demonstrate the presence of low metal levels occurring naturally in the water. The following are contaminants found in the wastewater sampled during the survey:

<sup>\*</sup>Hathaway, G. and Proctor, N. Chemical Hazards of the Workplace

Contaminant	Date Detected/Range mg/l	*Possible Source	Remarks
Bis(2ethylhexyl) phthalate	97/03/21,22,26,27 Range 10.9 - 4,760	PVC plasticizer	
Aluminum	97/03/21,22,23,25,26,27 Range 0.886 - 19.8	Corrosion protectant, alloy	

Contaminant	Date Detected/Range	*Possible Source	Remarks
	mg/l		
Antimony	97/03/21,22,23,25,27	alloy constituent	
	Range 0.004-0.01		
Arsenic	97/03/21,22,23,25,27	metal	
~ .	Range 0.005-0.02		11
Barium	97/03/21,22,23,25,26,27	Catalyst for organic	potable water = 0.033
	Range 0.033-1.11	reactions, lube oil	mg/l
		additive, electroplating	
Beryllium	97/03/21,22,23,25,	Hardening agent in	
	26,27	alloys	
	Range 0.0094-0.039		
Cadmium	97/03/21,22,23,25	Electroplating, alloy	
	Range 0.001-0.043		
Chromium	97/03/21,22,23,25,26	Stainless and alloy	
	Range 0.022-0.01	steels, pigments,	
		electroplating, catalysts,	
		and corrosion resistant	,
		products	
Cobalt	97/03/21, 22,23	Alloys, high speed	
	Range 0.043-0.125	steels, paints,	
		electroplating	
Copper	97/03/21, 22,23,25,26	Copper and brass	inordinately high 3/23
••	Range 0.021-2.45	manufacture, welding of	
		copper-containing	potable water = 0.015
		metals	mg/l
Iron	97/03/21,22,23,25,	Alloy	inordinately high
	25,26,27	_	3/21,22,23
	Range 0.426-106		potable water = 0.045
			mg/l
Lead	97/03/21,22,23,25,	Batteries, paint	potable water =
	26,27	1.	0.001mg/l
	Range 0.002-0.253		
Mercury	97/03/26,27	Electrical apparatus,	
•	Range 0.0003-0.0004	measurement and	
		control systems,	
		catalyst, paint	
Molybdenum	97/03/21,22	Pigments, corrosion	
<i>y</i>	Range 0.036-0.065	inhibitor, lubricant,	
		hydrogenation catalyst	
Nickel	97/03/21,22,23,25,26,27	Corrosion resistant	
	Range 0.067-0.241	alloys, electroplating,	
		nic-cad batteries	
	1	ino-cau panelles	i

Contaminant	Date Detected	Possible Source	Remarks
Selenium	97/03/22,23 Range <0.005-0.005	Glass and ceramics manufacture, rectifiers and photocells	
Silver	97/03/21,22,23,25 Range 0.007-0.03	Oxidizing agent, photography, silver plating	
Strontium	97/03/21,22,23,25,26,27 Range 0.628-1.47	Stainless and alloy steels, refractory products, pigments, electroplating, corrosion resistant products	potable water = 0.262 mg/l
Thallium	97/03/23 Range <0.001-0.002	Easily fusible heavy metal	
Titanium	97/03/21,22,23,25 Range 0.182-0.083	Acid resistant enamels, paint pigment, ceramics	
Zinc	97/03/21,22,23,25, 26,27 Range 0.116-4.97	Galvanized metals, electroplating, alloying, pigments	potable water = 0.006 mg/l
Oil and Grease	97/03/21*,22,25 *64 mg/l		*97/03/21 = hydraulic fluid

# Recommendations/Conclusions based on Visual Observation or Chemical Listing:

Recommend strict adherence to policies of minor touch-up only of B2 exterior involving sanding, stripping, or painting and following the plastic covering and draping procedure used in Bldg 27. Also, blocking (temporary or permanent) the drains will preclude pollutant discharges. This recommendation is based on the metals detected in the wastestream during the sampling period.

Given the inherent characteristics of the B2, it is understood substitution of hazardous materials may not be possible. For this reason, extreme caution must be followed, both to protect the worker and the environment. Additionally, any pollutant discharges from this facility are conveyed through the industrial discharge system and ultimately go to the wastewater treatment plant (WWTP). This is a crucial concern because of possible exposures to the treatment plant personnel and the ultimate disposal of wastewaters unique to this base. The sludge from the WWTP is dewatered, analyzed, and land applied and the effluent is being used to create artificial wetlands. It is critical the wetlands be maintained in a delicate balance in order to afford their continued use.

- a. Ensure spill kits are readily available and easily accessible.
- b. If applicable, with the exception of drains servicing washracks, cover or block (removable New Pig Catalog, May 96, pp 161-165 or permanent) shop drains during any operation that could generate a spill or paint residue. Utilize drip pans under any equipment or operation that may generate a spill.

- c. Dry sweep the floor prior to mopping (ONLY if procedures for capturing surface preparation residues are followed and concurrence with BEE) and minimize the amount of floor washwater by performing as a mop and bucket operation.
- d. Place flow restrictors on all hoses.
- e. Immediately clean up all spills with absorbant material and dispose as solid waste in drums to be characterized prior to disposal.
- f. Ensure all drains are blocked off prior to surface preparation and painting.

Shop: Fuel Cell BUILDING No. 1

Office Symbol: 509 MXS/LGMAF

**POC:** SSgt Mariani **Telephone:** 7603

#### **Mission Narrative:**

This section is responsible for fuel systems on the B2. Fuel cells on the B2 are located in the wings. Due to the technical difficulty of removing certain elements on the aircraft required for fuel cell entry, this procedure is performed at another out of state location. Northrop performs the aft deck repairs in this facility. Required chemicals for this repair are brought in from Bldg 27, Structural Maintenance. Tank maintenance performed in this shop involves; 1) roping off the area, 2) defueling into a bowser, 3) depuddling using sponges which are wrung out into a bucket 4) purging the tank, 5) obtaining a Lower Explosive Limit (LEL) reading, 6) changing out the required component and 6) exiting the tank. Structural Maintenance repairs the necessary outer structures, refuels and performs operation checks.

Customer: B2

#### Industrial Wastewater Sources:

There are two trench drains located in this building. The only discharge to these drains are floor washwater from a floor cleaning machine which could contain fuels. Recommend these drains are closed (temporary blocks) during fuel cell maintenance procedures.

# Pollutants of Concern based on Analytical Results:

Sampling was not done at this facility due to no flow at the appropriate manhole the duration of the survey.

# Recommendations/Conclusions based on Visual Observation and/or Chemical Listing Review:

Recommend floor drains are closed (temporary blocks) during fuel cell maintenance procedures.

The following chemicals were identified on your chemical authorization listing maintained by the BEE shop and also from the listing obtained from shop personnel during the survey. Given their hazardous properties both to the human and environment, please investigate substitution with a less hazardous material. This can be accomplished

by consulting the Technical Order that mandates its use and confirming if the T.O. authorizes a different chemical or contacting the item manager.

Additionally, recommend written tracking of hazardous materials brought in to your facility by contractor employees. This tracking should include, as a minimum; chemical, NSN, amount, application, and method of disposal.

\*Hathaway, G. and Proctor, N. Chemical Hazards of the Workplace

NSN	Name	*Haz Constituent	Recommended Action	Rationale
8030-00-008-7196	Sealing Compound	Magnesium Chromate	substitute IAW T.O.	health, environment found in wastewater downstream
8030-01-184-0328	PR-1436	Magnesium Chromate	substitute IAW T.O.	health, environment found in wastewater downstream
6810-00-281-2785	Methyl Ethyl Ketone	Methyl Ethyl Ketone	substitute IAW T.O.	health, environment found in wastewater

Given the inherent characteristics of the B2, it is understood substitution of hazardous materials may not be possible. For this reason, extreme caution must be followed, both to protect the worker and the environment. Additionally, any pollutant discharges from this facility are conveyed through the industrial discharge system and ultimately go to the wastewater treatment plant (WWTP). This is a crucial concern because of possible exposures to the treatment plant personnel and the ultimate disposal of wastewaters unique to this base. The sludge from the WWTP is dewatered, analyzed and land applied, and the effluent is being used to create artificial wetlands. It is critical the wetlands be maintained in a delicate balance in order to afford their continued use.

- a. Ensure spill kits are readily available and easily accessible.
- b. If applicable, with the exception of drains servicing washracks, cover or block (removable New Pig Catalog, May 96, pp 161-165 or permanent) shop drains during any operation that could generate a spill. Utilize drip pans under any equipment or operation that could generate a spill.
- c. Minimize the amount of floor washwater by performing as a mop and bucket operation. Dry sweep prior to mopping.
- d. Place flow restrictors on all hoses.
- e. Immediately clean up all spills with absorbant material and dispose as solid waste in drums to be characterized prior to disposal.

**Shop:** Propulsion **Building #:** 2

Office Symbol: 509 MXS/LGMP

**POC:** TSgt Fawcette **Telephone:** 7123

#### Mission Narrative:

Supply serviceable engines for the B2, AGE Powered Units, and tail assemblies. The following is a synopsis of each tasking:

- a. B-2 Disassembly of the B2 engine is limited to the fan section and number one area. The upper-lower fan ducts, all external components, and the upper and lower front frame fan cases are removed. The fan blades are then cleaned by wiping off with acetone and solid film lubricant, MIL N 2338 is applied. Fuel and oil are drained into a bucket, parts are inspected for serviceability and finally reassembled. The fuel system is preserved with 1010 fluid or 2.5 gallons of fuel.
- b. Age Powered Units Uncrated and preserved with 1010 or 6081 fluid and flushed twice per year to prevent the o-rings from deteriorating.
- c. Tail Pipes Completely disassembled, inspected, and repaired as required. Lubricated, inner liners replaced and reassembled. Exterior repairs are done by Structures.

Customer: B2, AGE

#### Industrial Wastewater Sources:

Floor washwater possibly contaminated with incidental spills of fuel, oil, and soap are dumped down the washrack drain located outside the facility. Washrack water containing residual oils, fuels, and engine steam cleaning residue.

#### Pollutants of Concern based on Analytical Results:

Sampling was not done at this facility due to no flow at the appropriate manhole the duration of the survey.

# Recommendations/Conclusions based on Visual Observation or Chemical Listing:

Substitution if possible, of lead containing paints NSN's 8010-00-598-5936 (Olive Drab) and 8010-01-331-6111 (Olive Drab) ONLY if in accordance with appropriate Technical Orders.

- a. Ensure spill kits are readily available and easily accessible.
- b. If applicable, with the exception of drains servicing washracks, cover or block (removable New Pig Catalog (May 96 pp161-165- or permanent) shop drains during any operation that could generate a spill. Utilize drip pans under any equipment or operation that may generate a spill.
- c. Minimize the amount of floor washwater by performing as a mop and bucket operation. Dry sweep the floor prior to mopping.
- d. Place flow restrictors on all hoses.
- e. Immediately clean up all spills with absorbant material and dispose as solid waste in drums to be characterized prior to disposal.

Shop: Structural Maintenance

**BUILDING No. 27** 

Office Symbol: 509 MXS/LGMFSM

**POC:** Sgt. Razick **Telephone:** 4722

#### Mission Narrative:

Responsible for maintaining the structural integrity of the B2 aircraft. This includes repair of the aircraft's outer surface which involves sanding, preparing, and painting the surface. Additionally, adhesive and composite work is performed in order to maintain the B2's structural integrity. The aircraft is washed every 120 days.

Customer: B2

#### Industrial Wastewater Sources:

Wastewater is produced from washing the aircraft in the main bay of the hangar. Possible pollutants in this wastewater would include oils, greases, fuels, metal/composite material leachates, and hydraulic fluid. The floors are washed using a floor scrubbing machine or manually washing. The aforementioned pollutants, with the addition of sanding residuals (metal, composite materials) and overspray are possible.

# Pollutants of Concern based on Analytical Results:

Wastewater sampling was conducted at the manhole which services your building. The annotation of pollutants is provided for identification of pollutant sources and ensuing pollution prevention initiatives. Potable water sample results are identified for background, baseline information. The following pollutants were detected:

\*Hathaway G. and Proctor N. Chemical Hazards of the Workplace, Third Edition

Contaminant	Date Detected	Possible Source	Remarks
Toluene	97/03/28	solvent for paints and coatings, component of gasoline	
Bis(2ethylhexyl)phth alate	97/03/22,24,26,27, 28	plasticizer for PVC	
Di-n-Octylphthalate	97/03/24,26,28		

Contaminant	Date Detected	Possible Source	Remarks
o,m,p Xylene	97/03/24,26,28	solvent, component	
		of fuel	
Chloroethane*	97/03/24	chemical	
sample contained		intermediate,	
silicic acid and 4-		refrigerant,	
hydroxy-4methyl		manufacture of ethyl	
pentanone		cellulose	
		*silicic acid - arrests	
		decay and	
		disintegration of	
		stone	
		4-hydroxy-4methyl	
		pentanone- solvent	·
		for pigments,	
		cellulose,	
		resins, hydrcarbons,	
		hydraulic brake	
		fluid	
Chloroform*	97/03/24	solvent	
*sample contained		*silicic acid - arrests	
silicic acid and 4-		decay and	
hydroxy-4methyl		disintegration of	
pentanone		stone	
		4-hydroxy-4methyl	
		pentanone- solvent	
		for pigments,	
		cellulose,	
		resins, hydrcarbons,	
		hydraulic brake	
		fluid	
Ethylbenzene	97/03/28	gasoline, industrial	
		solvent	
Aluminum	97/03/21,22,23,24,	metal alloy	
	25,26,27,28		
Antimony	97/03/22,27,28	constituent with	
		alloys with other	
	0-100/01/02/03	metals	
Barium	97/03/21,2224,25,26	lube oil additive,	potable water =
	,27,28	manufacture of	0.033 mg/l
		paper electrodes,	
		catalyst for organic	
		reactions	

Contaminant	Date Detected	Possible Source	Remarks
Cadmium	97/03/21,22,23,24,	electroplating,	
	25,26,28	solder for	
		aluminum,	
		constituent of easily	
		fusible alloys,	
		deoxidizer in nickel	
		plating	
Chromium	97/03/21,25,27	stainless and alloy	
		steels, pigments,	
•		electroplating,	
		corrosion resistant	
		products	
Copper	97/03/21,22,23,24,	metal alloy	potable water =
	25,26,27,28		0.015 mg/l
Iron	97/03/21,22,23,24,	metal	potable water =
	25,26,27		0.045 mg/l
Lead	97/03/21, 22,	paint, ink, ceramics,	potable water =
	23,24,25,26,28	batteries	0.001 mg/l
Mercury	97/03/25,26	paint, measure	
•		devices	
Molybdenum	97/03/21,22	manufacture of	
		special purpose	
		steel, pigment	
		additive	
Nickel	97/03/21,25,27,28	corrosion resistant	
		alloy, electroplating,	
		nic-cad batteries	
Strontium	97/03/21,22,23,24	stainless and alloy	potable water =
	25,26,27,28	steels, pigments,	0.262 mg/l
		electroplating,	
		corrosion resistant	
		products	
Zinc	97/03/21,22,23,24,	galvanizing,	
	25,26,27,28	electroplating,	potable water =
		alloying, paint	0.006 mg/l
		pigments	

Recommendations/Conclusions based on Visual Observation and/or Chemical Listing Review:

Following review, chemicals were identified on your chemical authorization listing maintained by the BEE shop and also from the listing obtained from shop personnel during the survey (NOTE: possible classified materials are not identified). Given their hazardous properties both to the human and environment, please investigate substitution with a less hazardous material. This can be accomplished by consulting the Technical Order (T.O.) that mandates it's use and confirming if the T.O. authorizes a different chemical or contacting the item manager.

Additionally, recommend written tracking of hazardous materials brought in to your facility by contractor employees. This tracking should include, as a minimum; chemical, NSN, amount, application, and method of disposal.

\*Hathaway G. and Proctor N. Chemical Hazards of the Workplace, Third Edition

NSN	Name	*Haz Constituent	Recommended Action	Rationale
8010-01-388-4022	Polyurethane	Chromium	substitute IAW	health,
		III	T.O.	environment
				found in
				wastewater
6810-00-281-2785	MEK	MEK	substitute IAW	health,
			T.O.	environment
8040-01-386-7185	Toluene	Toluene	substitute IAW	health,
			T.O.	environment
				found in
				wastewater
6810-00-664-0387	1,1,1	1,1,1	substitute IAW	health,
	Trichloroeth	Trichloroetha	T.O.	environment
	ane	ne		found in
				wastewater

NSN	Name	Haz	Recommended	Rationale
		Constituent	Action	
8030-00-008-7196	Sealing Compound	Magnesium Chromate	substitute IAW T.O.	health, environment found in wastewater
8010-00-935-7080	Primer, Elect	Strontium Chromate	substitute IAW T.O.	health, environment found in wastewater
8030-01-184-0328	PR 1436	Magnesium Chromate	substitute IAW T.O.	health, environment found in wastewater
8040-01-288-5856	Adhesive	Aluminum	substitute IAW T.O.	health, environment found in wastewater
8030-01-319-0554	Sealing Compound	Manganese Chromate	substitute IAW T.O.	health, environment found in wastewater
8010-01-386-7668	Poly Green	Strontium Chromate	substitute IAW T.O.	health, environment found in wastewater
8030-01-319-0554	Sealing Compound	Nickel	substitute IAW T.O.	health, environment found in wastewater
8040-01-208-9494	Adhesive	Copper Silver	substitute IAW T.O.	health, environment found in wastewater
8010-00-082-2450	Primer	Strontium Chromate	substitute IAW T.O.	health, environment found in wastewater
6810-00-281-2762	MEK	MEK	substitute IAW T.O.	health, environment found in wastewater

NSN	Name	Haz	Recommended	Rationale
		Constituent	Action	
8010-00-598-5936	OD Paint	Lead	substitute IAW T.O.	health, environment found in wastewater
8010-01-266-6576	Polyamide	Strontium Chromate	substitute IAW T.O.	health, environment found in wastewater

Given the inherent characteristics of the B2, it is understood substitution of hazardous materials may not be possible. For this reason, extreme caution must be followed, both to protect the worker and the environment. Additionally, any pollutant discharges from this facility are conveyed through the industrial discharge system and ultimately go to the wastewater treatment plant (WWTP). This is a crucial concern because of possible exposures to the treatment plant personnel and the ultimate disposal of wastewaters unique to this base. The sludge from the WWTP is dewatered, analyzed and land applied, and the effluent is being used to create artificial wetlands. It is critical the wetlands be maintained in a delicate balance in order to afford their continued use.

- a. Ensure spill kits are readily available and easily accessible.
- b. If applicable, with the exception of drains servicing washracks, cover or block (removable New Pig Catalog, May 96, pp 161-165 or permanent) shop drains during any operation that could generate a spill. Utilize drip pans under any equipment or operation that could generate a spill. Designation of one trench drain to contain all washwater and blocking the remaining drains would be a viable option.
- c. Minimize the amount of floor washwater by performing as a mop and bucket operation. Dry sweep prior to mopping (ONLY with concurrence of the BEE shop, given the dust particles that may be generated).
- d. Place flow restrictors on all hoses.
- e. Immediately clean up all spills with absorbant material and dispose as solid waste in drums to be characterized prior to disposal.

Shop: Phase Inspection, NDI, Metals Technology, Electro-Environmental,

Pneudraulics, Structures **BUILDING No.** T9

Office Symbol: 509 MXS

POC: Phase Inspection - TSgt Blaszeck x3189, Pneudraulics - TSgt Williams x7685,

NDI - MSgt Anderson x7695, Electro Environmental - SSgt Landreneau x 7679,

Structures - SMSgt Garrett x7709, Metals Tech - TSgt Ferencz x7706

Telephone: see above

#### Mission Narrative:

**Phase Inspection** - This shop is responsible for the B2 aircraft inspection required after a predetermined number of flying hours. Prior to arrival for the phase inspection, the B2 is washed and prepared for the inspection at Bldg 27. Inspection is performed on the hydraulic systems and engines with Quality Assurance primarily performing the engine inspections.

**NDI:** Inspection of the T-38, AGE equipment and Munitions for structural integrity by means of magnetic particle, ultrasound, eddy current, fluorescent penetrant dye or x-ray.

**Metals Technology:** This shop provides machining, repair, welding, and heat treating of metals and plastics requiring fabrication. This service is provided for the base, other DoD agencies (A-10, Apache Helicopter, T-38), Northrop, and Air Combat Command.

**Electro Environmental:** Shop responsible for charging and recharging aircraft batteries for the B2 and T-38 aircraft. The nickel cadmium batteries are checked for bad cells. If the cells are found to be serviceable they are rinsed off and replaced. Component repair is also done for relay panels, light assemblies, explosion proof panels, cooling packs, and air conditioning for the B2 and T-38.

**Pneudraulics:** Provides intermediate overhaul of aircraft support equipment and hydraulics for the T-38 and B2. Periodically makes hose assemblies for AGE.

**Structural Maintenance:** Provides repair of any composite material portions of the B2 to include special coatings. Sheetmetal work is also performed in this section for the local manufacture of shelves and signs.

Industrial Wastewater Sources: Wastewater sources include the parts washer used in Pneudraulics which washes parts of the B2 brakes and master cylinders. This wastewater was collected, analyzed, and determined not to be a hazardous waste (reference Bioenvironmental Engineering sample number BEF#GM961234-1326, 15 Oct 96. Wastewater disposed by the NDI shop consists of rinse water generated during the fluorescent dye penetrant rinse procedure and x-ray development chemicals which are pretreated by a silver recovery unit. Floor washwater is discharged throughout the

facility. The major potential contributor to this wastestream is the Phase Inspection dock. B2 phase inspections could possibly involve leaking fuel, hydraulic fluids, greases, and oils during the inspection which would minimally be contained in the floor washwater.

# Pollutants of Concern based on Analytical Results:

Sampling was conducted at the manhole which services your facility. Annotation of detected pollutants are provided for identification of pollutant sources and ensuing pollution prevention initiatives. Potable water sample results are identified for background, baseline information. The following pollutants were detected:

\*Hathaway G. and Proctor N. Chemical Hazards of the Workplace, Third Edition

Contaminant	Date Detected	Possible Source	Remarks
Oil and Grease	97/03/23,24	oils, fuels, hydraulic fluid, greases	
Chemical Oxygen Demand	97/03/22,23,24	organic waste	
Toluene	97/03/24	solvent for paints and coatings, component of gasoline	
Bis(2ethylhexyl)phthalate	97/03/22,24	plasticizer for PVC	
Di-n-Octylphthalate	97/03/22		
o,m,p Xylene	97/03/23,24	solvent, component of fuel	
Ethylbenzene	97/03/24	gasoline, industrial solvent	
Aluminum	97/03/21,22,23,24	metal alloy	
Antimony	97/03/21,24	constituent with alloys with other metals	
Barium	97/03/21,22,23,24	lube oil additive, manufacture of paper electrodes, catalyst for organic reactions	potable water = 0.033 mg/l
Cadmium	97/03/21,22,23,24	electroplating, solder for aluminum, constituent of easily fusible alloys, deoxidizer in nickel plating	
Chromium	97/03/21,23	stainless and alloy steels, pigments, electroplating, corrosion resistant products	
Beryllium	97/03/23	non-corrodible metal used in alloys	

Contaminant	Date Detected	Possible Source	Remarks
Copper	97/03/21,22,23,24	metal alloy	potable water = 0.015 mg/l
Lead	97/03/21, 22, 23,24	paint, ink, ceramics, batteries	potable water = 0.001 mg/l
Molybdenum	97/03/22	manufacture of special purpose steel, pigment additive	
Nickel	97/03/23	corrosion resistant alloy, electroplating, nic-cad batteries	
Strontium	97/03/21,22,23,24	stainless and alloy steels, pigments, electroplating, corrosion resistant products	potable water = 0.262 mg/l
Zinc	97/03/21,22,23,24,	galvanizing, electroplating, alloying, paint pigments	potable water = 0.006 mg/l

# Recommendations/Conclusions based on Visual Observation and/or Chemical Listing Review:

### Phase Inspection:

The following chemicals were identified on your chemical authorization listing maintained by the BEE shop and also from the listing obtained from shop personnel during the survey. Given their hazardous properties both to the human and environment, please investigate substitution with a less hazardous material. This can be accomplished by consulting the Technical Order that mandates it's use and confirming if the T.O. authorizes a different chemical or contacting the item manager.

Additionally, recommend written tracking of hazardous materials brought in to your facility by contractor employees. This tracking should include, as a minimum; chemical, NSN, amount, application, and method of disposal.

\*Hathaway G. and Proctor N. Chemical Hazards of the Workplace, Third Edition

NSN	Name	*Haz Constituent	Recommended Action	Rationale
8030-01-184-0328	Sealing Compound	Strontium chromate	substitute IAW T.O.	health, environment found in wastewater
8030-01-319-0554	Sealing Compound	Magnesium Chromate	substitute IAW T.O.	health, environment found in wastewater
8030-00-762-8007	Manganese Dioxide	Magnesium Chromate	substitute IAW T.O.	health, environment found in wastewater
8030-00-008-7196	Sealant	Magnesium Chromate	substitute IAW T.O.	health, environment found in wastewater

NSN	Name	Haz Constituent	Recommended Action	Rationale
6810-00-281-2785	MEK	MEK	substitute IAW T.O.	health, environment
8040-01-208-9494	Adhesive	Copper Silver	substitute IAW T.O.	health, environment, found in wastewater
8030-01-088-0088	Sealant	Lead	substitute IAW T.O.	health, environment, found in wastewater
8040-01-288-5856	EA 9394	Aluminum	substitute IAW T.O.	health, environment, found in wastewater
9150-00-249-9290	Release Agent	1,1,1 Trichloroethane	substitute IAW T.O.	health

**Metals Technology:** Chemical listing reviewed and only recommendation is to try and locate a lead free solder.

**Pneudraulics:** The following chemical was identified on your chemical authorization listing maintained by the BEE. Given its hazardous properties both to the human and environment, please investigate substitution with a less hazardous material. This can be accomplished by consulting the Technical Order that mandates it's use and confirming if the T.O. authorizes a different chemical or contacting the item manager.

\*Hathaway G. and Proctor N. Chemical Hazards of the Workplace, Third Edition

NSN	Name	*Haz Constituent	Recommended Action	Rationale
8030-01-184-0328	Courtaulds Aerosol	magnesium chromate	substitute IAW T.O.	health, environment found in wastewater

**Electro-Environmental:** The following chemicals were identified on your chemical authorization listing maintained by the BEE shop. Given their hazardous properties both to the human and environment, please investigate substitution with a less hazardous material. This can be accomplished by consulting the Technical Order that mandates it's use and confirming if the T.O. authorizes a different chemical or by calling the item manager.

\*Hathaway G. and Proctor N. Chemical Hazards of the Workplace, Third Edition

NSN	Name	*Haz Constituent	Recommended Action	Rationale
8040-01-208-9494	Cho-Bond 1038	copper silver	substitute IAW T.O.	health, environment found in wastewater
8030-00-148-7362	Sealing compound	lead	substitute IAW T.O.	health, environment found in wastewater
8030-00-174-2597	Sealing compound	lead	substitute IAW T.O.	health, environment found in wastewater

**Structural Maintenance:** Chemical listing review for this shop can be found in the narrative for Structural Maintenance, Bldg 27 where all of the hazardous materials are maintained.

NDI: Chemical listing reviewed with no additional recommendations.

- a. Ensure spill kits are readily available and easily accessible.
- b. If applicable, with the exception of drains servicing washracks, cover or block (removable New Pig Catalog, May 96, pp 161-165 or permanent) shop drains during any operation that could generate a spill. Utilize drip pans under any equipment or operation that could generate a spill.
- c. Minimize the amount of floor washwater by performing as a mop and bucket operation. Dry sweep prior to mopping.
- d. Place flow restrictors on all hoses.
- e. Immediately clean up all spills with absorbant material and dispose as solid waste in drums to be characterized prior to disposal.

Shop: Wheel and Tire

Building #: 4

Office Symbol: 509 MXS/LGMMW

**POC:** Sgt McCarthy **Telephone:** 7727

#### Mission Narrative:

Inspection, build-up, breakdown and repair of wheel assemblies for the T-38 and B2.

Customer: B2, T-38

#### Industrial Wastewater Sources:

Floor washwater possibly contaminated with incidental spills of oils and greases. Wheel assembly parts are cleaned in a parts washer that uses hot water and natural orange. The sludge from the oil skimmer on the parts washer is placed in a container for disposal. Samples were collected in Aug 94 of the parts washer fluid and sludge. Given the contaminants detected, recommend resampling by Bioenvironmental Engineering and written records maintained with proper disposal protocol.

#### Pollutants of Concern based on Analytical Results:

Sampling was not done at this facility due to no flow at the appropriate manhole the duration of the survey.

#### Recommendations/Conclusions based on Visual Observation or Chemical Listing:

Following review of your authorized chemical listing, there are no recommendations.

- a. Ensure spill kits are readily available and easily accessible.
- b. If applicable, with the exception of drains servicing washracks, cover or block (removable New Pig Catalog (May 96 pp161-165- or permanent) shop drains during any operation that could generate a spill. Utilize drip pans under any equipment or operation that may generate a spill.